I-4589

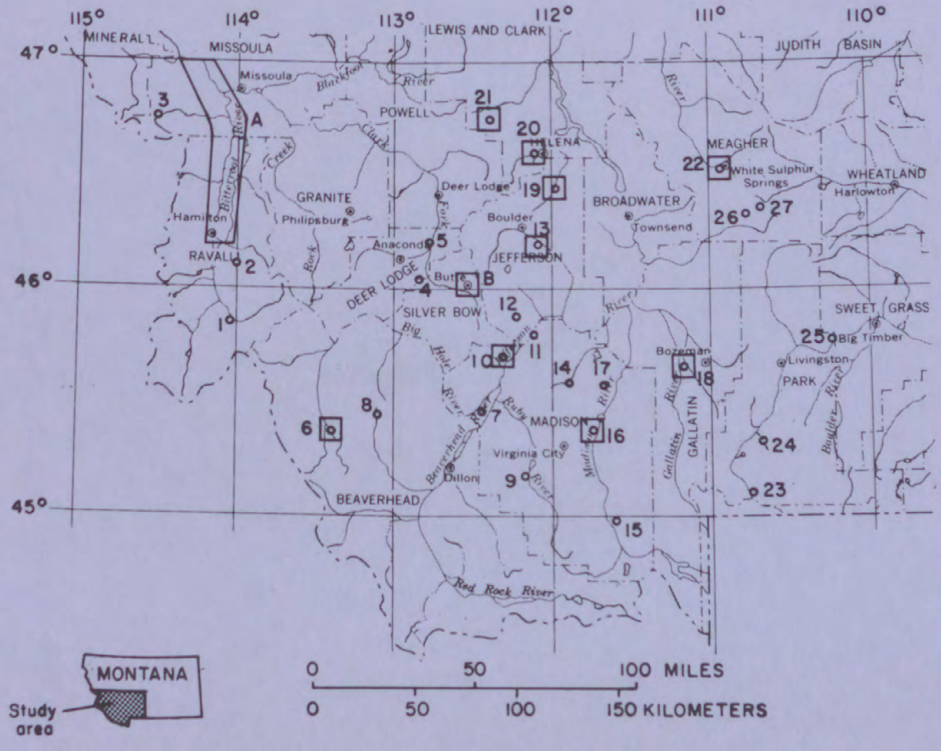
SUPPLEMENTAL DATA FROM THE ENNIS AND OTHER THERMAL-SPRING AREAS, SOUTHWESTERN MONTANA, 1978-80

U.S. GEOLOGICAL SURVEY

Open-File Report 80-1182

MSO
LIBRARY
Routed-Res

Prepared in cooperation with the
Montana Bureau of Mines and Geology



U.S. DEPARTMENT OF THE INTERIOR
March 3, 1849

DEPT. OF INTERIOR
BUR. OF LAND MANAGEMENT

1980 NOV 13 AM 8:00

RECEIVED
MONTANA STATE OFFICE
BILLINGS, MONTANA

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUPPLEMENTAL DATA FROM THE ENNIS AND OTHER THERMAL-SPRING AREAS, SOUTHWESTERN MONTANA, 1978-80

By Robert B. Leonard and Wayne A. Wood

Open-File Report 80-1182

Prepared in cooperation with the
Montana Bureau of Mines and Geology

Helena, Montana

October 1980

UNITED STATES
DEPARTMENT OF THE INTERIOR
GEOLOGICAL SURVEY

SUPPLEMENTAL DATA FROM THE ENNIS AND OTHER THERMAL-SPRING AREAS, SOUTHWESTERN MONTANA, 1978-80

By Robert B. Leonard and Wayne A. Wood

Open-File Report 80-1182

MSO
LIBRARY

Prepared in cooperation with the
Montana Bureau of Mines and Geology

Helena, Montana

October 1980

CONTENTS

ILLUSTRATION

TABLES

METRIC CONVERSION TABLE

The following factors can be used to convert inch-pound units in this report to the International System (SI) of metric units.

Multiply inch-pound units	By	To obtain SI units
acre	0.4047	square hectometer
acre-ft (ac-ft)	1233	cubic meter
foot (ft)	0.3048	meter
gallon per minute (gal/min)	0.06309	liter per second
inch (in.)	25.40	millimeter
mile (mi)	1.609	kilometer

temperature, degrees Celsius (°C) = 0.556 (°F-32)

SUPPLEMENTAL DATA FROM THE ENNIS AND OTHER THERMAL-SPRING AREAS, SOUTHWESTERN MONTANA, 1978-80

By

Robert B. Leonard and Wayne A. Wood

ABSTRACT

Hydrogeologic data were collected principally during 1978-80 in eight hot-spring areas, in the Marysville geothermal test well, in the Butte Mine and in the Bitterroot and Missoula River valleys to provide a basis for evaluating the geothermal potential of the areas. Measurements are tabulated for subsurface temperatures, water levels, rates of flow, and the chemical composition of water and gas in wells and test holes. Most of the data are for the area near Ennis Hot Springs.

INTRODUCTION

During 1975-80 the Montana district of the U.S. Geological Survey collected and assembled data describing the flow, temperature, and chemical characteristics of thermal and related waters in southwestern Montana, excluding Yellowstone Park. As part of an assessment of the geothermal resources of the area, a report including most of the data collected during 1975-77, with correlative data from previous investigations, was prepared by Leonard, Brosten, and Midtlyng (1978). The purpose of this report is to release supplemental data mainly collected on-site by the Geological Survey from 1978 to 1980. A small amount of earlier data, omitted from the preceding report, is included.

Data included in the preceding report principally describe surface conditions at 24 thermal springs where water temperatures exceed 38°C (100°F). Parts of the data were used for the National Assessment of Geothermal Resources (Muffler, 1978), for describing specific areas (Leonard and Janzer, 1978; Leonard, Shields, and Midtlyng, 1978), and for selection of typical hydrothermal systems suitable for additional study. The bulk of the data included in this report describes subsurface conditions in eight areas where thermal wells and test holes were installed by landowners, industry, the Geological Survey, and other Federal and State agencies. Permission was granted by the Anaconda Company and by Continental Oil Company for publication of thermal data measured by the Survey from their test holes. Research by the Geological Survey, in cooperation with landowners and the Montana Bureau of Mines and Geology, in the vicinity of Ennis (Thexton) Hot Springs produced most of the data included herein.

For convenience, the formats of this report and the 1978 report are similar. In the preceding report, chemical analyses and associated data were grouped in tables by hot-spring areas, arranged in downstream order according to major river basins, and indexed numerically on a map. The same index numbers are

used in this report. Data from test holes in additional areas of the Bitterroot and Missoula River valleys and the Butte Mine have been assigned letters (fig. 1). The Marysville geothermal test well, although not directly associated with a hot spring, is assigned number 21, as in the preceding report. Locations of individual sites within each area are described by name, by a station number composed of latitude and longitude, and by local (landline) description.

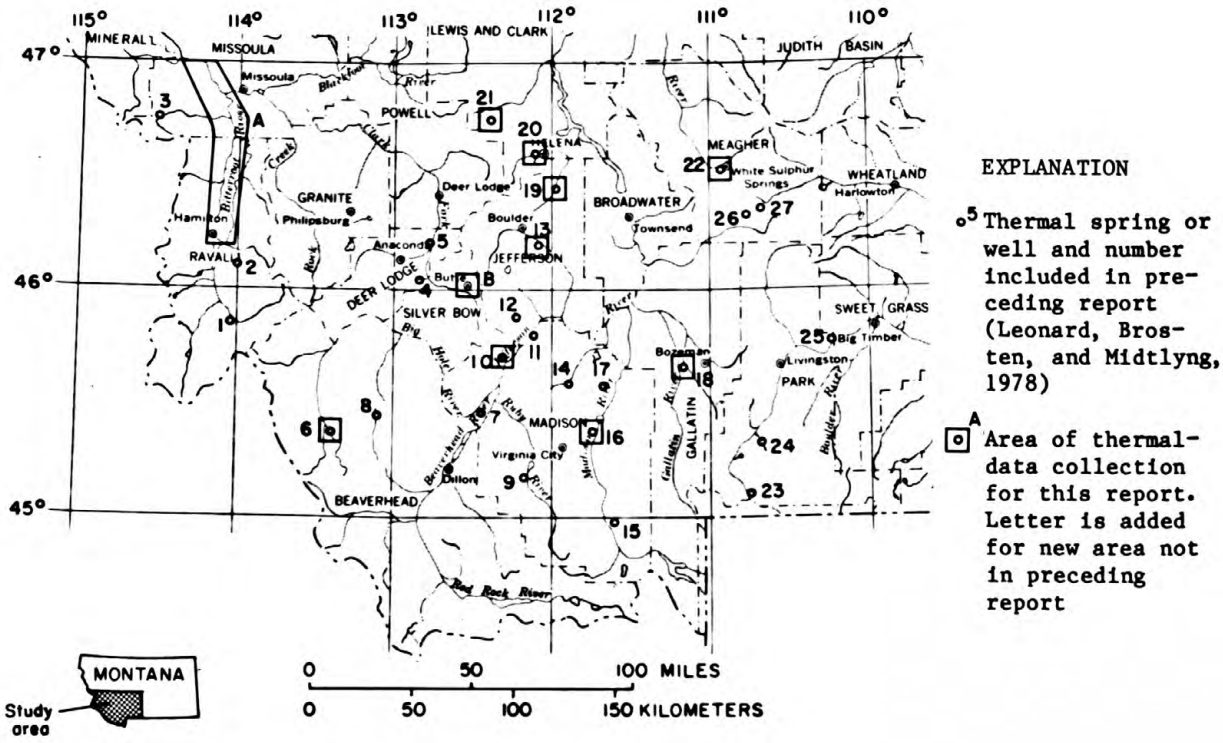


Figure 1.--Location of study area.

Reported rates of discharge from wells and springs, particularly at commercially developed hot springs, vary widely according to the observer or use of the water. A large part of the discharge of springs normally occurs as seepage. Where feasible for this study, discharge of springs or wells was measured directly using the Hoff or Pygmy current meter, a Parshall flume, or a container of known volume and a stopwatch. Rates of flow given in the accompanying tables represent the discharge at the time of water sampling or temperature measurement.

Most of the chemical analyses in tables 1-3 are of samples collected according to techniques outlined by Presser and Barnes (1974); as specified by the National Water Quality Laboratory of the Geological Survey in Denver, Colo.; or as specified by Survey research laboratories in Menlo Park, Calif. Analyses of samples of gas associated with the thermal waters (table 4), and

analyses of water samples for their content of the stable isotope oxygen-18 (^{18}O) in water and in the sulfate ion (table 5), were expedited by Mariner to ensure comparability with the results of previous investigations (Mariner and others, 1976; Leonard and Janzer, 1978; Leonard, Brosten, and Midtlyng, 1978).

The isotopic data are expressed in the delta (δ) notation:

$$\delta x = \frac{R_x - R_{std}}{R_{std}} \times 10^3$$

where

δ_x = reporting unit in parts per thousand,
R_x = ratio of isotopic concentration of the sample ($^{18}O/^{16}O$), and
R_{std} = ratio of isotopic concentration of the standard (Standard Mean Ocean Water or SMOW)

Subsurface temperatures in wells or test holes were measured with a thermistor-Wheatstone bridge combination capable of measuring temperatures with a precision of 0.1 degree Celsius at depths of 3,000 feet (table 6). After July 1979, measurements at depths less than 1,000 feet were made by a digital thermometer with reel.

The annulus between the 2-inch diameter steel casing and the walls of most test holes in the Ennis area was filled with cement to prevent vertical circulation of water. Under static conditions and after sufficient time has elapsed, the temperature logs presumably represent the temperature/depth profiles of the surrounding material. Changes in successive profiles normally reflect the approach to thermal equilibrium. Wells other than test wells were logged under a wide variety of conditions. Users of the data are cautioned that the resultant temperature/depth profiles may describe transient effects of drilling, or effects of natural or pumped circulation of water within or adjacent to the well bore.

As shown in the headings of table 6, some of the casings were sealed and water levels in the casing did not reflect the actual potentiometric surface. Some were subsequently gun-perforated in the indicated intervals. In the absence of such notation, the base of the casing can be assumed to be open, or terminated with a screened sand point.

In addition to the temperature logs, single-point resistivity, self potential, and natural gamma-ray logs were made of wells and test holes in the Ennis area. Resistivity and self potential logs were made of the open holes. Where feasible, temperature and natural gamma logs were made both before and after installation of casing. As a result of wide variation in the type and condition of the logging equipment, as well as the temperature and composition of the drilling fluids, the quality of the logs varied significantly. Some were discarded. Those retained in the Geological Survey office in Helena, Mont., are listed in table 7, where they are classified from excellent to poor.

Fluctuations in the water level in the Marysville geothermal test well (table 8) were measured from June 1977 through June 1979 using a spring-driven water-stage recorder and float. Earlier records were affected by instrument malfunction. A water-level hydrograph prepared from the measurements, but not shown in this report, consists of a series of troughs and crests approximating semidiurnal, diurnal, and fortnightly periodicity, apparently correlative with the phases of the moon. Kanheiro (1979) confirmed that the periodic fluctuations represent the response of the aquifer to earth tides.

Variations in the daily mean water levels were small during any given month; therefore, only the maximum and minimum water levels and amplitudes, and the corresponding daily mean water level for each month of record, are listed in table 8. Short-term perturbations may represent release of gas, seismic activity, or instrument malfunction. Previous water-level measurements made during the drilling and subsequent logging operations of the well (McSpadden, 1977) were referred to the Kelly bushing (altitude 5,396 ft) of the drilling rig, which was 20 ft above the land surface used as datum in this report.

SELECTED REFERENCES

Chadwick, R. A. and Kaczmarek, M. B., 1975, Geothermal investigations of selected Montana hot springs, in Energy resources of Montana: Montana Geological Society 22nd Annual Publication, p. 209-216.

Hackett, O. M., Visher, F. N., McMurtrey, R. G., and Steinhilber, W. L., 1960, Geology and ground-water resources of the Gallatin Valley, Gallatin County, Montana, *with a section on* Surface-water resources by Frank Stermitz and F. C. Boner *and a section on* Chemical quality of the water by R. A. Krieger: U.S. Geological Survey Water-Supply Paper 1482, 282 p.

Kaczmarek, M. B., 1974, Geothermometry of selected Montana hot spring waters: Bozeman, Montana State University, M.S. thesis, 141 p.

Kanheiro, B. Y. [1979], The response of aquifers to the earth tides: Berkeley, University of California, M.S. thesis, 120 p.

Leonard, R. B., 1979, Structural controls of hot-spring systems in southwestern Montana, U.S. Geological Survey Open-File Report 79-1333, 25 p.

Leonard, R. B., and Janzer, V. J., 1978, Natural radioactivity in geothermal waters, Alhambra Hot Springs and nearby areas, Jefferson County, Montana: U.S. Geological Survey Journal of Research, v. 6, no. 4, p. 529-540.

Leonard, R. B., Shields, R. R., and Midtlyng, N. A., 1978, Water-quality investigation near the Chico and Hunters geothermal lease-application areas, Park and Sweet Grass Counties, Montana: U.S. Geological Survey Open-File Report 78-199, 23 p.

Leonard, R. B., Brosten, T. M., and Midtlyng, N. A., 1978, Selected data from thermal-spring areas, southwestern Montana: U.S. Geological Survey Open-File Report 78-438, 71 p.

Mariner, R. H., Presser, T. S., and Evans, W. C., 1976, Chemical characteristics of the major thermal springs of Montana: U.S. Geological Survey Open-File Report 76-480, 31 p.

McSpadden, W. R., 1975, The Marysville, Montana geothermal project, final report: Battelle-Pacific Northwest Laboratories; Rogers Engineering Co.; Southern Methodist University; and Systems, Science, and Software, 337 p.

_____1977, Temperature and water measurements in the geothermal well at Marysville, Montana, final report: Richland, Wash., Battelle-Pacific Northwest Laboratories, 54 p.

Muffler, L. P., ed., 1978 [1979], Assessment of geothermal resources of the United States--1978: U.S. Geological Survey Circular 790, 163 p.

Presser, T. S., and Barnes, Ivan, 1974, Special techniques for determining chemical properties of geothermal water: U.S. Geological Survey Water-Resources Investigations 22-74, 11 p.

Robertson, E. C., Fournier, R. O., and Strong, C. P., 1976, Hydrothermal activity in southwestern Montana: Proc. 2d U.N. Symposium on "The Development and use of Geothermal Resources," v. 1, p. 553-561.

Waring, G. A, 1965, Thermal springs of the United States and other countries of the world--A summary, *revised by* R. R. Blankenship and Ray Bentall: U.S. Geological Survey Professional Paper 492, 833 p.

DATA

Tables 1-3 are presented in a similar format. Areas identified in the table titles correspond to hot-spring areas shown on figure 1. The date of sample collection is repeated for each line of data in the tables to facilitate identification of the source of the sample. Location numbers, column headings, and abbreviations that are not self-explanatory are described below.

The station number is based on the grid system of latitude and longitude. The station number consists of 15 digits. The first 6 digits denote the degrees, minutes, and seconds of latitude; the next 7 digits denote the degrees, minutes, and seconds of longitude; and the last 2 digits form a sequential number for stations within the same 1-second grid. Thus, if two stations have the same coordinates for latitude and longitude, sequential numbers 01 and 02 are assigned.

Local station-location numbers are shown to the right of station numbers. The location numbers are based on the Federal system of land subdivision. The first number indicates the township north (N) or south (S) of the Montana base line; the second, the range east (E) or west (W) of the principal meridian; the third, the section. The first letter following the section number denotes the quarter section (160-acre tract); the second, the quarter-quarter section (40-acre tract); the third, the quarter-quarter-quarter section (10-acre tract); and the fourth, the quarter-quarter-quarter-quarter section (2 1/2-acre tract). Letters are assigned in a counterclockwise direction, beginning with "A" in the northeast quadrant. Finally, consecutive two-digit numbers are added based on the order of inventory. For example, test hole 05S01W28DCBA01 is the first station inventoried in the NE1/4 NW1/4 SW1/4 SE1/4 sec. 28, T. 5 S., R. 1 W.

Abbreviations used in the column headings of tables 1-3 are:

AC-FT	Acre-feet
DEG C	Degrees Celsius
FT	Feet
GPM	Gallons per minute
MG/L	Milligrams per liter
MICROMHOS	Micromhos per centimeter at 25°C
PCI/L	Picocuries per liter
UG/L	Micrograms per liter

Table 1.--Chemical analyses of water from Ennis (Thexton) Hot Springs (area 16)

STATION NUMBER	LOCAL NUMBER	STATION NAME	DATE OF SAMPLE	TIME	SAMPLING DEPTH (FT)	DEPTH OF WELL, TOTAL (FEET)	FLOW RATE (GPM)
452202111445100	05S01W28DCA 01	ENNIS THEXTON HOT SPR	80-03-24	1600	--	--	--
452203111434101	05S01W28DCBA01	TEST HOLE TX-1 ENNIS	79-10-06	1145	324	338	--
452203111434801	05S01W28DCBB01	TEST HOLE TX-2 ENNIS	78-10-06	1300	383	425	--
452144111433901	05S01W33ABDB01	TEST HOLE TX-4 ENNIS	78-06-08	1615	284	285	.20
452201111432901	05S01W28DDBC01	TEST HOLE TX-5 ENNIS	78-06-08	1850	315	323	.20
	05S01W28DDBC01	TEST HOLE TX-5 ENNIS	79-12-04	1600	>133	323	--
452225111441701	05S01W28BCBD01	TEST HOLE TX-6 ENNIS	78-06-08	1200	198	198	.20
452149111441201	05S01W33BBAA01	TEST HOLE TX-7 ENNIS	78-11-01	1445	50	50	--
452249111433901	05S01W21DCDB01	TEST HOLE TX-8 ENNIS	79-12-05	1000	210	331	5.0
452151111440001	05S01W33BBAA02	TEST HOLE TX-9 ENNIS	79-12-05	1350	--	403	--
452252111414901	05S01W23CCBD01	TEST HOLE TX-10 ENNIS	79-10-02	1730	110	848	60
	05S01W23CCBD01	TEST HOLE TX-10 ENNIS	80-03-26	1030	740	848	<.10
452214111432802	05S01W28DABC02	TEST HOLE TX-11 ENNIS	79-11-16	0915	>515	625	2.5
	05S01W28DABC02	TEST HOLE TX-11 ENNIS	79-12-27	1200	>515	625	8.0
452214111432801	05S01W28DABC01	SHOT HOLE SH-1 ENNIS	78-11-02	1145	53	53	4.0
452140111442601	05S01W33BBCC01	SHOT HOLE SH-3 ENNIS	78-11-01	1700	50	50	.30
452212111440201	05S01W28CABD01	SHOT HOLE SH-4 ENNIS	78-11-02	0930	46	46	12
452208111434901	05S01W28DBCB01	CYPRUS WELL 1	79-07-25	1500	81	81	10
452209111434901	05S01W28DBCB02	CYPRUS WELL 2	79-04-20	1630	38	38	4.5
452226111434600	05S01W28ACBC01	DOM. WELL M.GRIFFIN	79-03-16	1415	180	217	25
452142111435501	05S01W33BADB01	DOM. WELL J.NORTHWAY	78-06-06	1940	42	42	20
452220111433401	05S01W28ACDD01	DOM. WELL S.PRAY	78-06-08	1715	135	136	10
452120111444901	06S01W05AABD01	ENNIS RANGER STA.WELL	79-03-28	1200	135	135	100
452112111440001	05S01W33CDBD01	DOM. WELL SPORTSMANS	78-06-08	1430	80	80	100
452227111434401	05S01W28ACBA01	DOM. WELL M.TOTH	78-05-12	1125	207	210	9.0
452158111434001	05S01W28DCCA01	DOM. WELL YENNY	78-05-11	1745	124	124	9.0

Table 1.--Chemical analyses of water from Ennis (Thexton) Hot Springs (area 16)--Continued

DATE OF SAMPLE	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)
80-03-24	1540	8.4	75.5	14	0	5.5	.1	320	95	37	15	--
79-10-06	1520	8.6	77.8	10	0	3.5	.3	340	96	47	15	--
78-10-06	1550	--	36.0	13	--	5.0	.1	270	96	33	8.3	--
78-06-08	348	8.2	12.5	13	0	3.7	.9	75	89	9.1	5.1	180
78-06-08	630	8.3	21.0	9	0	3.3	.2	130	95	19	4.3	220
79-12-04	300	9.7	36.0	23	0	7.6	.9	120	92	11	3.8	--
78-06-08	812	7.2	15.2	7	0	2.1	.4	180	95	30	9.4	270
78-11-01	493	7.4	11.5	210	--	58	17	25	20	.7	7.4	--
79-12-05	370	8.9	20.0	27	0	9.6	.8	110	89	9.2	4.7	--
79-12-05	376	9.4	24.0	14	0	5.1	.4	110	92	13	7.3	--
79-10-02	389	8.9	10.8	180	46	44	16	10	11	.3	2.0	--
80-03-26	300	9.7	5.0	25	0	5.5	2.8	49	71	4.2	15	--
79-11-16	1480	8.9	60.0	16	0	5.9	.2	330	94	36	24	--
79-12-27	1610	--	88.0	12	0	4.8	.0	340	96	43	16	--
78-11-02	1530	7.1	51.1	17	--	5.8	.6	330	95	35	18	--
78-11-01	341	7.8	10.5	130	--	32	11	21	25	.8	8.2	--
78-11-02	569	7.5	11.0	250	--	66	20	26	18	.7	6.6	--
79-07-25	1470	7.6	41.1	13	0	4.4	.5	290	96	35	13	--
79-04-20	611	8.9	20.0	19	0	5.6	1.3	140	91	14	7.1	--
79-03-16	1215	8.2	33.0	26	0	9.1	.9	240	93	20	7.8	--
78-06-06	453	7.6	12.2	200	27	50	18	18	16	.6	4.5	210
78-06-08	1530	7.5	44.4	17	0	5.0	1.0	330	96	35	12	430
79-03-28	507	7.4	13.0	210	17	55	17	23	19	.7	8.9	--
78-06-08	450	7.7	12.8	210	33	54	19	17	14	.5	4.8	220
78-05-12	1470	7.8	33.0	31	0	9.3	2.0	310	94	24	9.3	410
78-05-11	527	7.4	31.0	93	0	28	5.6	75	62	3.4	5.8	190

Table 1.--Chemical analyses of water from Ennis (Thexton) Hot Springs (area 16)--Continued

DATE OF SAMPLE	CARBONATE (MG/L AS CO3)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	BORON, DISSOLVED (UG/L AS B)	IRON, DISSOLVED (UG/L AS FE)	LITHIUM DISSOLVED (UG/L AS LI)	MANGANESE, DISSOLVED (UG/L AS MN)
80-03-24	--	350	210	120	10	100	992	.10	620	<10	280	20
79-10-06	--	320	220	120	9.5	45	945	1.2	710	560	210	7
78-10-06	--	210	210	110	10	46	--	.07	580	10	150	0
78-06-08	0	150	18	10	.9	42	246	.20	50	280	50	5
78-06-08	17	210	43	20	3.4	44	374	.04	200	330	70	0
79-12-04	--	200	52	24	3.4	52	385	.10	220	110	60	4
78-06-08	0	220	91	54	2.6	43	516	.03	170	230	100	5
78-11-01	--	200	35	16	.3	39	--	1.7	90	20	20	20
79-12-05	--	180	59	8.5	2.7	34	348	2.3	100	90	30	<1
79-12-05	--	200	33	18	2.0	43	340	.09	130	200	60	<1
79-10-02	--	130	63	6.7	.2	19	242	.54	30	40	10	2
80-03-26	--	68	57	7.2	.5	.3	180	.11	770	40	30	9
79-11-16	--	370	210	110	20	120	1050	.47	740	160	240	6
79-12-27	--	330	270	120	9.8	160	1120	.04	610	200	200	30
78-11-02	--	350	210	110	9.5	90	985	.07	640	160	260	30
78-11-01	--	130	29	15	.5	30	226	1.5	80	20	20	70
78-11-02	--	190	88	21	.4	28	371	.10	70	110	30	210
79-07-25	--	290	210	73	6.8	72	845	.04	390	30	240	20
79-04-20	--	210	68	24	2.1	23	398	.04	90	730	30	10
79-03-16	--	280	160	68	11	46	712	.00	380	110	170	20
78-06-06	0	170	30	18	.5	31	278	.90	70	120	30	0
78-06-08	0	350	190	110	9.1	75	945	.03	540	220	250	5
79-03-28	--	190	43	29	.8	48	345	.99	120	1300	50	30
78-06-08	0	180	32	21	.3	34	295	.90	50	160	20	5
78-05-12	0	340	170	100	7.7	47	859	.06	380	290	200	10
78-05-11	0	160	52	32	1.8	43	342	1.1	120	70	60	5

Table 2.--Chemical analyses of water from Bozeman (Ferris, Matthews) Hot Springs (area 18)

STATION NUMBER	LOCAL NUMBER	STATION NAME	DATE OF SAMPLE	TIME	FLOW RATE (GPM)	SPECIFIC CONDUCTANCE (MICROMHOS)	PH (UNITS)
453937111111000	02S04E13CCB 01	BOZEMAN HOT SPR WELL	79-11-30	1000	2.6	588	9.4
453935111112101	02S04E14DDB 01	DOM.WELL BOZEMAN COLD	79-11-30	1430	600	393	8.3

DATE OF SAMPLE	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)
79-11-30	46.0	12	0	4.7	.1	120	95	15	1.2	57	120	49
79-11-30	10.0	180	0	53	12	22	26	.7	3.2	200	19	1.1

DATE OF SAMPLE	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	BORON, DISSOLVED (UG/L AS B)	IRON, DISSOLVED (UG/L AS FE)	LITHIUM DISSOLVED (UG/L AS LI)	MANGANESE, DISSOLVED (UG/L AS MN)
79-11-30	2.9	34	367	.04	240	20	30	2
79-11-30	.2	24	257	.44	10	<10	10	2

Table 3.--Chemical analyses of water from White Sulphur (Brewers) Springs (area 22)

STATION NUMBER	LOCAL NUMBER	STATION NAME	DATE OF SAMPLE	TIME	SAMPLING DEPTH (FT)	FLOW RATE (GPM)	SPECIFIC CONDUCTANCE (MICROMHOS)
463251110541000	09N07E16bbbD01	WHITE SULPHUR SPRINGS	78-08-20	1500	--	--	2360
463254110541800	09N06E13AAA 01	FIRST NATL BANK WELL	78-07-26	1645	870	67	2270
	09N06E13AAA 01	FIRST NATL BANK WELL	78-08-12	1825	300	80	2460

DATE OF SAMPLE	PH (UNITS)	TEMPERATURE (DEG C)	HARDNESS (MG/L AS CACO3)	HARDNESS, NONCARBONATE (MG/L CACO3)	CALCIUM DISSOLVED (MG/L AS CA)	MAGNESIUM, DISSOLVED (MG/L AS MG)	SODIUM, DISSOLVED (MG/L AS NA)	SODIUM PERCENT	SODIUM ADSORPTION RATIO	POTASSIUM, DISSOLVED (MG/L AS K)	BICARBONATE (MG/L AS HCO3)	CARBONATE (MG/L AS CO3)
78-08-20	6.9	48.0	150	0	41	11	480	86	17	22	790	0
78-07-26	6.4	45.0	140	0	41	10	440	85	16	21	780	0
78-08-12	--	47.2	--	--	--	--	--	--	--	--	--	--

DATE OF SAMPLE	ALKALINITY (MG/L AS CACO3)	SULFATE DISSOLVED (MG/L AS SO4)	CHLORIDE, DISSOLVED (MG/L AS CL)	FLUORIDE, DISSOLVED (MG/L AS F)	SILICA, DISSOLVED (MG/L AS SIO2)	SOLIDS, SUM OF CONSTITUENTS, DISSOLVED (MG/L)	NITROGEN, NO2+NO3 DISSOLVED (MG/L AS N)	ARSENIC DISSOLVED (UG/L AS AS)	BORON, DISSOLVED (UG/L AS B)	IRON, DISSOLVED (UG/L AS FE)	LEAD, DISSOLVED (UG/L AS PB)	LITHIUM DISSOLVED (UG/L AS LI)
78-08-20	650	300	170	7.1	48	1470	.01	2	--	20	7	--
78-07-26	640	260	170	7.7	44	1390	.02	--	8300	700	--	1300
78-08-12	--	--	200	7.1	46	--	--	--	8300	--	--	1400

DATE OF SAMPLE	MANGANESE, DISSOLVED (UG/L AS MN)	MERCURY DISSOLVED (UG/L AS HG)	SELENIUM, DISSOLVED (UG/L AS SE)	STRONTIUM, DISSOLVED (UG/L AS SR)	RADIUM 226, DISSOLVED, RADON METHOD (PCI/L)	URANIUM DISSOLVED, EXTRACTION (UG/L)
78-08-20	170	.0	0	--	2.2	.02
78-07-26	160	--	--	--	--	--
78-08-12	--	--	--	1900	--	--

Table 4.--*Composition of gases escaping from thermal waters near Ennis (Thexton) Hot Springs (area 16)*

[Composition is in percent by volume. Analysis by W. C. Evans, U.S. Geological Survey, Menlo Park, Calif.]

Location		Name	Date of sample	Oxygen (O_2)	Argon (Ar)	Nitrogen (N_2)
Latitude	Longtitude					
45°22'02"	111°44'51"	Ennis (Thexton) Hot Springs	10-06-79	19.9	1.1	74.5
45°22'14"	111°43'28"	Test hole TX-11	12-21-79	0	1.7	86.8
			12-27-79	0	1.8	89.3
45°22'01"	111°43'29"	Test hole TX-5	09-05-79	.14	.25	11.5

Date of sample	Methane (CH_4)	Carbon dioxide (CO_2)	Ethane (C_2H_6)	Helium (He)	Hydrogen (H_2)	Hydrogen sulfide (H_2S)	Reported total
10-06-79	0.03	4.5	<0.005	0.05	<0.005	---	99.98
12-21-79	.8	8.8	--	1.3	0.6	---	100.00
12-27-79	.8	6.4	--	1.3	0.5	---	100.10
09-05-79	.01	0.02	<.01	--	88.7	<0.01	100.70

Table 5.--Isotopic composition of selected thermal and cool waters

[oxygen isotope ratios are reported relative to Standard Mean Ocean Water (SMOW)]

Thermal-spring area (fig. 1)	Location		Name	Date of sample	Isotopic composition, in parts per thousand	
	Latitude	Longitude			$\delta^{18}O_{SO_4}$	$\delta^{18}O_{H_2O}$
6	45°22'04"	113°24'11"	Jackson (Jardine, Big Hole) Hot Springs	07-23-76	-1.02	-19.45
10	45°41'07"	112°17'42"	Silver Star (Barkells) Hot Springs	08-18-74	--	-18.48
				09-09-76	-5.46	--
13	46°11'53"	112°05'37"	Boulder (Diamond S) Hot Springs	03-31-76	--	-18.60
				04-27-76	-5.45	--
16	45°22'02"	111°44'51"	Ennis (Thexton) Hot Springs	04-29-76	-1.80	-19.09
				12-27-79	--	-18.74
19	46°26'47"	111°58'58"	Alhambra north spring	08-23-74	--	-19.23
				04-29-76	-3.49	--
19	46°27'01"	111°58'50"	Alhambra hot well (north)	04-29-76	-3.49	-19.95

Table 6.--*Subsurface temperatures in selected water wells and test holes*
[Abbreviations: ft, feet; in., inches; m, meters; MP, measuring point; LSD, land-surface datum].

Bitterroot/Missoula Valley (area A)

Well MB 2. Lat 47°03'10" N., long 114°17'25" W. Reported well depth, 2,516 ft (766.9 m) below LSD. Water level, unknown (in drilling mud). MP is top of 4 in. casing 1.65 ft (0.50 m) above LSD. Site elevation 3,450 ft (1051.6 m) above sea level. Date of measurements, Nov. 8, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	6.6	251	76.5	14.6	501	152.7	16.4
49	14.9	8.7	301	91.7	14.9	551	167.9	16.8
101	30.8	11.2	351	107.0	15.1	599	182.6	17.1
150	45.7	13.3	400	121.9	15.5	650	198.1	17.6
200	61.0	13.8	450	137.2	15.9	671	204.5	17.7

Well MB 2. Lat 47°03'10" N., long 114°17'25" W. Reported well depth, 2,516 ft (766.9 m) below LSD. Water level, 119.9 ft (36.56 m) below LSD. MP is top of 4 in. casing 1.6 ft (0.49 m) above LSD. Site elevation 3,450 ft (1051.6 m) above sea level. Date of measurements, May 22, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	12.0	407	124.1	14.1	824	251.2	18.2
21	6.4	11.5	427	130.1	14.3	846	257.9	18.3
43	13.1	11.0	448	136.5	14.5	866	264.0	18.5
60	18.3	10.8	472	143.9	14.7	886	270.1	18.7
82	25.0	11.0	493	150.3	15.0	905	275.8	18.8
104	31.7	11.2	514	156.7	15.2	925	281.9	18.9
122	37.2	11.2	534	162.8	15.4	945	288.0	19.0
143	43.6	11.4	555	169.2	15.6	964	293.8	19.2
161	49.1	11.6	579	176.5	15.9	987	300.8	19.3
182	55.5	11.7	603	183.8	16.1	1007	306.9	19.4
204	62.2	11.9	624	190.2	16.4	1026	312.7	19.6
225	68.6	12.0	644	196.3	16.6	1048	319.4	19.7
243	74.1	12.3	668	203.6	16.9	1067	325.2	19.9
264	80.5	12.6	685	208.8	17.0	1086	331.0	20.0
285	86.9	12.8	705	214.9	17.2	1105	336.8	20.1
306	93.3	13.1	725	221.0	17.4	1124	342.6	20.2
323	98.5	13.2	745	227.1	17.6	1143	348.4	20.4
344	104.8	13.4	765	233.2	17.7	1165	355.1	20.5
365	111.3	13.6	785	239.3	17.9	1187	361.8	20.6
386	117.7	13.8	805	245.4	18.0	1206	367.6	20.8

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Bitterroot/Missoula area Valley (area A)--Continued

Well MB 2.--Continued

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
1224	373.1	20.9	1579	481.3	23.2	1925	586.7	25.4
1245	379.5	21.0	1596	486.5	23.3	1945	592.8	25.5
1266	385.9	21.2	1617	492.9	23.5	1964	598.6	25.7
1288	392.6	21.3	1637	499.0	23.6	1987	605.6	25.8
1310	399.3	21.5	1658	505.4	23.8	2007	611.7	25.9
1332	406.0	21.6	1680	512.1	23.9	2026	617.5	26.1
1351	411.8	21.7	1702	518.8	24.0	2048	624.2	26.2
1370	417.6	21.8	1723	525.2	24.2	2067	630.0	26.4
1394	424.9	22.0	1743	531.3	24.3	2086	635.8	26.5
1413	430.7	22.1	1763	537.4	24.4	2105	641.6	26.6
1434	437.1	22.2	1784	543.8	24.5	2127	648.3	26.7
1453	442.9	22.4	1805	550.2	24.6	2147	654.4	26.9
1475	449.6	22.5	1825	556.3	24.8	2170	661.4	27.0
1497	456.3	22.6	1846	562.7	24.9	2189	667.2	27.1
1514	461.5	22.7	1866	568.8	25.0	2209	673.3	27.3
1536	468.2	22.9	1886	574.8	25.1	2231	680.0	27.4
1557	474.6	23.0	1906	580.9	25.3	2253	686.7	27.4
						2270	691.9	27.4

Well MB 4. Lat 46°57'37" N., long 114°03'47" W. Reported well depth, 2,907 ft (886.1 m) below LSD. Water level, unknown. MP is top of 6 in. casing 1.8 ft (0.55 m) above LSD. Site elevation 3,540 ft (1079.0 m) above sea level. Date of measurements, Nov. 8, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
1	0.3	10.6	951	289.9	19.0	1900	579.1	25.2
49	14.9	9.9	1000	304.8	19.4	1951	594.7	25.5
100	30.5	10.5	1050	320.0	19.6	1999	609.3	25.7
149	45.4	11.1	1100	335.3	19.8	2049	624.5	26.1
201	61.3	11.7	1150	350.5	20.1	2101	640.4	26.6
251	76.5	12.3	1200	365.8	20.4	2151	655.6	27.0
299	91.1	12.8	1251	381.3	20.6	2200	670.6	27.4
349	106.4	13.5	1299	395.9	20.9	2251	686.1	27.8
400	121.9	14.1	1351	411.8	21.2	2301	701.3	28.2
451	137.5	14.6	1400	426.7	21.5	2350	716.3	28.6
499	152.1	15.3	1451	442.3	21.9	2400	731.5	28.7
550	167.6	15.8	1500	457.2	22.4	2451	747.1	29.2
600	182.9	16.3	1549	472.1	22.9	2500	762.0	29.6
649	197.8	16.8	1600	487.7	23.2	2550	777.2	30.0
701	213.7	17.1	1649	502.6	23.5	2600	792.5	30.4
750	228.6	17.6	1701	518.5	23.8	2649	807.4	30.5
800	243.8	18.1	1751	533.7	24.1	2700	823.0	30.8
849	258.8	18.3	1800	548.6	24.9	2750	838.2	31.0
900	274.3	18.4	1851	564.2	24.8	2800	853.4	31.4
						2850	868.7	31.7

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Bitterroot/Missoula Valley (area A)--Continued

Drillhole MB 6. Lat 46°34'35" N., long 114°07'57" W. Reported well depth, 1,736 ft (529.1 m) below LSD. Water level, 23.0 ft (7.0 m) below LSD. MP is top of 2 in. casing 0.85 ft (0.26 m) above LSD. Site elevation 3,620 ft (1103.4 m) above sea level. Date of measurements, May 21, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	28.3	416	126.8	14.0	841	256.3	19.1
21	6.4	12.3	434	132.3	14.3	861	262.4	19.3
25	7.6	8.2	455	138.7	14.5	880	268.2	19.6
52	15.8	9.1	475	144.8	14.8	901	274.6	19.8
73	22.3	9.4	496	151.2	15.0	922	281.0	20.0
95	28.9	9.8	516	157.3	15.3	942	287.1	20.3
116	35.4	10.1	534	162.8	15.4	962	293.2	20.5
138	42.1	10.4	555	169.2	15.7	981	299.0	20.8
156	47.5	10.7	574	174.9	16.0	1000	304.8	21.0
174	53.0	10.9	594	181.1	16.2	1020	310.9	21.3
195	59.4	11.2	619	188.7	16.5	1043	317.9	21.5
213	64.9	11.4	639	194.8	16.7	1062	323.7	21.8
234	71.3	11.7	660	201.2	17.0	1085	330.7	22.0
255	77.7	11.9	680	207.3	17.3	1104	336.5	22.3
276	84.1	12.3	701	213.7	17.5	1124	342.6	22.5
294	89.6	12.5	721	219.8	17.7	1143	348.4	22.7
315	96.0	12.7	741	225.9	18.0	1165	355.1	23.0
336	102.4	12.9	762	232.3	18.2	1183	360.6	23.2
353	107.6	13.2	782	238.4	18.5	1202	366.4	23.4
374	114.0	13.5	802	244.4	18.7	1220	371.8	23.6
395	120.4	13.7	822	250.5	18.9	1233	375.8	23.7

Well MB 8. Lat 46°34'34" N., long 114°02'13" W. Reported well depth, 2,723 ft (830 m) below LSD. Water level, unknown (in drilling mud). Site elevation 3,720 ft (1133.9 m) above sea level. Date of measurements, July 23, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	33.8	440	134.1	14.6	920	280.4	20.6
20	6.1	26.0	480	146.3	15.2	960	292.6	21.3
40	12.2	18.4	520	158.5	15.7	1000	304.8	21.8
80	24.4	15.4	560	170.7	16.1	1040	317.0	22.3
120	36.6	14.0	600	182.9	16.5	1080	329.2	22.6
160	48.8	13.3	640	195.1	17.2	1120	341.4	23.1
200	61.0	11.9	680	207.3	17.9	1160	353.6	23.6
240	73.2	12.0	720	219.5	18.2	1200	365.8	24.0
280	85.3	13.4	760	231.6	18.6	1240	378.0	24.5
320	97.5	14.2	800	243.8	19.2	1280	390.1	25.1
360	109.7	13.8	840	256.0	19.7	1310	399.3	25.4
400	121.9	14.4	880	268.2	20.1	1317	401.4	25.5

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Bitterroot/Missoula Valley (area A)--Continued

Drillhole MB 9. Lat 46°36'05" N., long 113°57'34" W. Reported well depth, 1,030 ft (313.9 m) below LSD. Water level, 316.6 ft (96.50 m) below LSD. MP is top of 2 in. pipe 1.8 ft (0.55 m) above LSD. Site elevation 4,000 ft (1219.2 m) above sea level. Date of measurements, May 22, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	31.4	402	122.5	16.2	671	204.5	19.3
20	6.1	23.8	423	128.9	16.5	694	211.5	19.5
41	12.5	16.4	443	135.0	16.8	717	218.5	19.7
75	22.9	14.2	463	141.1	17.1	740	225.5	20.0
100	30.5	14.3	484	147.5	17.3	759	231.3	20.3
151	46.0	13.6	504	153.6	17.5	782	238.4	20.8
201	61.3	13.7	528	160.9	17.8	802	244.4	21.1
251	76.5	14.1	548	167.0	18.1	821	250.2	21.5
301	91.7	14.5	568	173.1	18.2	841	256.3	21.8
321	97.8	14.8	588	179.2	18.5	864	263.3	22.1
341	103.9	15.1	607	185.0	18.7	883	269.1	22.4
362	110.3	15.3	631	192.3	18.9	903	275.2	22.7
382	116.4	15.7	651	198.4	19.1	926	282.2	23.2
						937	285.6	23.4

Well MB 12. Lat 46°16'59" N., long 114°04'09" W. Reported well depth, 1,110 ft (338.3 m) below LSD. Water level, 66 ft (20.12 m) below LSD. MP is top of 4 in. casing 0.6 ft (0.18 m) above LSD. Site elevation 3,795 ft (1,156.7 m) above sea level. Date of measurements, July 12, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	23.6	340	103.6	14.8	680	207.3	21.3
20	6.1	13.2	360	109.7	15.4	700	213.4	21.5
40	12.2	12.3	380	115.8	15.8	720	219.5	21.8
60	18.3	11.9	400	121.9	16.3	740	225.5	22.1
80	24.4	10.0	420	128.0	16.8	760	231.6	22.6
100	30.5	10.4	440	134.1	17.2	780	237.7	23.0
120	36.6	10.9	460	140.2	17.7	800	243.8	23.2
140	42.7	11.4	480	146.3	18.3	820	249.9	23.4
160	48.8	11.8	500	152.4	18.8	840	256.0	23.7
180	54.9	12.1	520	158.5	19.1	860	262.1	24.1
200	61.0	12.3	540	164.6	19.5	880	268.2	24.3
220	67.1	12.6	560	170.7	19.8	900	274.3	24.3
240	73.2	13.0	580	176.8	20.1	920	280.4	24.4
260	79.2	13.2	600	182.9	20.3	940	286.5	24.4
280	85.3	13.6	620	189.0	20.5	960	292.6	24.6
300	91.4	14.0	640	195.1	20.7	980	298.7	25.0
320	97.5	14.4	660	201.2	21.0	987	300.8	25.3

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Butte (Anaconda) Deep Mine (area B)

Diamond drill hole A-3896. East Colusa Shaft. Lat 46°01'19" N., long 112°30'22" W. Reported well depth, 2,154 ft (656.5 m) below LSD. Water level, flowing from annulus. Site elevation 2,409 ft (734.3 m) above sea level. Casing: 1-1/4 in. ID PVC to total depth. Drilling angle, started 60° to SSW, averaged 65° S. Date of measurements, Aug. 7, 1975.

Measured depth below casing (feet)	(meters)	Temperature (°C)	Measured depth below casing (feet)	(meters)	Temperature (°C)	Measured depth below casing (feet)	(meters)	Temperature (°C)
0	0	38.4	500	152.4	52.4	1400	426.7	58.7
50	15.2	39.4	600	182.9	53.3	1500	457.2	59.1
100	30.5	42.5	700	213.4	54.4	1600	487.7	59.5
150	45.7	46.0	800	243.8	55.4	1700	518.2	60.1
200	61.0	48.0	900	274.3	56.1	1800	548.6	60.4
250	76.2	49.6	1000	304.8	56.7	1900	579.1	60.8
300	91.4	50.3	1100	335.3	57.3	2000	609.6	61.3
385	117.3	51.6	1120	365.8	57.8	2100	640.1	61.8
400	121.9	51.7	1300	396.2	58.2	2154	656.5	62.1

Ennis (Thexton) Hot Springs (area 16)

Thexton hot well. Lat 45°22'07" N., long 111°43'37" W. Measured well depth, 97 ft (29.6 m) below LSD. Water level, 12.2 ft (3.72 m) below LSD. MP is top of cement slab at LSD. Cement slab is 3.65 (1.11 m) above top of 6 in. casing. Site elevation 4,919 ft (1,499.1 m) above sea level. Date of measurements, Oct. 11, 1977.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
9	2.7	17.0	40	12.2	81.3	70	21.5	88.8
15	4.6	62.6	46	13.9	82.8	76	23.2	89.1
21	6.3	67.0	51	15.5	85.6	80	24.3	89.2
25	7.6	71.4	56	17.2	86.9	85	26.0	89.3
31	9.3	75.0	60	18.3	87.9	91	27.7	89.3
36	11.1	79.2	65	19.9	88.4	95	28.9	89.3
						97	29.5	89.4

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Thexton hot well. Lat 45°22'07" N., long 111°43'37" W. Measured well depth, 97 ft (29.6 m) below LSD. Water level, 12.9 ft (3.92 m) below LSD. MP is top of cement slab at LSD cement slab is 3.65 ft (1.11 m) above top of 6 in. casing. Site elevation 4,919 ft (1,499.1 m) above sea level. Date of measurements, Aug. 23, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	29.8	31	9.5	37.5	60	18.3	53.4
10	3.0	29.8	40	12.2	44.2	69	21.0	57.5
20	6.1	35.4	49	14.9	48.1	80	24.4	64.4
						89	27.1	68.8
						97	29.6	72.2

Test hole TX-1. Lat 45°22'03" N., long 111°43'41" W. Reported well depth, 338 ft (103.02 m) below LSD. Water level in plastic tremie pipe perforated at 87 ft (26.52 m), 12.41 ft (3.78 m) below LSD. MP is top of plastic pipe 2.75 ft (0.84 m) above LSD. Site elevation 4,922 ft (1,500.1 m) above sea level. Date of measurements, Nov. 1, 1977.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	8.7	111	33.7	84.0	220	67.2	85.7
10	3.0	37.8	120	36.6	85.9	230	70.1	85.5
21	6.3	48.3	131	39.8	84.8	240	73.2	85.6
30	9.2	59.4	140	42.6	84.6	250	76.3	85.7
42	12.7	67.1	150	45.8	84.8	260	79.3	85.5
51	15.6	72.6	160	48.9	85.3	270	82.2	86.1
61	18.6	76.3	171	52.0	85.0	280	85.4	86.3
70	21.4	78.6	181	55.1	86.1	291	88.7	86.3
80	24.5	82.9	191	58.3	86.0	300	91.4	86.1
90	27.5	82.9	201	61.3	85.7	311	94.9	86.0
101	30.9	82.9	211	64.2	85.7	320	97.7	85.7
						331	100.9	86.7
						335	102.1	88.2

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Test hole TX-1. Lat 45°22'03" N., long 111°43'41" W. Reported well depth, 338 ft (103.02 m) below LSD. Water level in plastic tremie pipe perforated at 87 ft (26.52 m) 17.5 ft (5.33 m) below LSD. MP is top of plastic pipe 2.75 ft (0.84 m) above LSD. Site elevation 4,922 ft (1,500.1 m) above sea level. Date of measurements, Nov. 3, 1977.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	11.9	111	33.7	87.9	221	67.3	87.2
10	3.0	43.9	120	36.5	88.2	231	70.3	87.2
20	6.1	61.8	131	39.8	87.2	240	73.3	87.1
30	9.1	64.1	141	43.1	87.1	250	76.3	87.1
40	12.1	72.0	150	45.7	87.3	261	79.4	87.0
51	15.6	77.6	161	48.9	87.7	270	82.4	87.2
60	18.4	81.0	171	52.2	87.4	280	85.2	87.2
70	21.3	83.3	181	55.3	87.9	291	88.5	87.2
81	24.7	87.3	190	57.8	87.9	300	91.4	87.0
90	27.4	86.7	201	61.2	87.5	310	94.5	86.9
100	30.5	86.4	211	64.2	87.3	321	97.7	86.8
						330	100.5	87.2
						337	102.7	88.0

Test hole TX-1. Lat 45°22'03" N., long 111°43'41" W. Reported well depth, 338 ft (103.02 m) below LSD. Water level in plastic tremie pipe perforated at 87 ft (26.52 m), 7.2 ft (2.2 m) below LSD. MP is top of plastic pipe 2.75 ft (0.84 m) above LSD. Site elevation 4,922 ft (1,500.1 m) above sea level. Date of measurements, Nov. 29, 1977.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
2	0.7	18.8	71	21.6	89.1	141	42.9	89.2
10	3.0	69.7	76	23.3	89.3	146	44.5	89.2
16	4.7	70.9	80	24.4	89.4	151	46.0	89.2
20	5.9	71.3	85	26.0	89.4	155	47.1	89.3
26	7.8	72.0	91	27.6	89.4	160	48.7	89.3
29	9.0	73.5	96	29.4	89.4	165	50.3	89.3
33	10.2	77.2	102	31.0	89.3	170	51.9	89.3
35	10.7	82.2	107	32.6	89.3	176	53.5	89.3
41	12.4	86.2	111	33.7	89.4	181	55.0	89.3
45	13.7	87.4	116	35.4	89.3	186	56.5	89.3
50	15.4	88.1	120	36.5	89.3	191	58.1	89.1
56	17.0	88.6	125	38.1	89.2	196	59.6	88.9
61	18.7	88.9	130	39.8	89.2	200	61.0	88.8
65	19.8	89.0	136	41.4	89.2	205	62.4	88.8

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Test hole TX-1--Continued

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
210	63.9	88.8	251	76.4	88.5	291	88.6	88.3
216	65.8	88.7	257	77.9	88.5	295	90.0	88.2
221	67.4	88.7	260	79.4	88.4	300	91.5	88.1
226	68.9	88.6	265	80.8	88.4	307	93.5	88.1
231	70.4	88.6	270	82.2	88.4	311	94.9	88.0
236	71.9	88.5	276	84.1	88.4	316	96.3	88.0
241	73.5	88.5	282	85.9	88.4	320	97.7	87.9
246	75.0	88.5	286	87.3	88.4	326	99.4	87.9
						332	101.2	87.9
						337	102.7	88.0

Test hole TX-1. Lat 45°22'03" N., long 111°43'41" W. Reported well depth, 338 ft (103.02 m) below LSD. Water level in plastic tremie pipe perforated at 87 ft (26.52 m), 7.1 ft (2.16 m) below LSD. MP is top of plastic pipe 2.75 ft (0.84 m) above LSD. Site elevation 4,922 ft (1,500.1 m) above sea level. Date of measurements, Mar. 7, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	22.0	84	25.6	89.0	180	54.9	89.0
10	3.0	65.8	90	27.4	89.0	190	57.9	89.0
15	4.6	69.5	100	30.5	89.0	200	61.0	89.0
22	6.7	70.2	102	31.1	89.0	210	64.0	88.9
26	7.9	71.2	106	32.3	89.0	220	67.1	88.6
31	9.5	72.9	110	33.5	89.0	231	70.4	88.7
35	10.7	74.1	115	35.1	89.0	240	73.2	88.6
41	12.5	78.3	120	36.6	89.0	250	76.2	88.6
46	14.0	86.6	124	37.8	89.1	262	79.9	88.7
50	15.2	87.9	131	39.9	89.1	271	82.6	88.7
55	16.8	88.3	135	41.2	89.1	282	86.0	88.5
59	18.0	88.6	140	42.7	89.1	290	88.4	88.3
63	19.2	88.6	145	44.2	89.1	301	91.7	88.1
70	21.3	89.0	150	45.7	89.1	312	95.7	87.9
75	22.9	89.0	160	48.8	89.0	320	97.5	87.9
80	24.4	89.0	170	51.8	89.0	331	100.9	88.1
						335	102.1	88.1

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Test hole TX-1. Lat 45°22'03" N., long 111°43'41" W. Reported well depth, 338 ft (103.02 m) below LSD. Water level in sealed pipe, 7.3 ft (2.23 m) below LSD. MP is top of 2 in. pipe 2.8 ft (0.85 m) above LSD. Site elevation 4,922 ft (1,500.1 m) above sea level. Date of measurements, May 24, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	8.8	110	33.6	89.2	220	67.0	88.6
10	3.0	48.1	121	36.9	89.1	230	70.0	88.5
20	6.1	66.1	130	39.7	89.1	240	73.2	88.5
30	9.2	74.9	141	42.9	89.2	250	76.1	88.5
41	12.4	80.5	151	46.1	89.2	259	79.1	88.4
50	15.3	84.7	161	49.2	89.2	270	82.4	88.3
61	18.6	86.8	170	51.8	89.5	280	85.2	88.2
70	21.4	87.9	180	54.9	89.4	290	88.4	88.1
80	24.5	88.9	190	58.0	89.0	301	91.7	87.9
90	27.4	88.8	200	61.1	88.8	311	94.7	87.9
101	30.7	88.8	210	64.0	88.7	320	97.5	87.8
						330	100.6	87.7
						338	103.0	87.7

Test hole TX-1. Lat 45°22'03" N., long 111°43'41" W. Reported well depth, 338 ft (103.02 m) below LSD. Water level in sealed pipe, 4.1 ft (1.25 m) below LSD. MP is top of 2 in. pipe 2.8 ft (0.85 m) above LSD. Site elevation 4,922 ft (1,500.1 m) above sea level. Date of measurements, Oct. 4, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	25.8	121	36.9	88.3	231	70.4	88.3
11	3.4	26.7	130	39.6	88.3	239	72.8	87.8
19	5.8	60.0	139	42.4	88.3	250	76.2	87.8
30	9.1	75.5	141	43.0	88.3	259	78.9	87.8
41	12.5	81.1	149	45.4	88.3	270	82.3	87.8
50	15.2	84.4	160	48.8	88.3	279	85.0	87.9
61	18.6	86.6	171	52.1	88.3	290	88.4	87.2
70	21.3	87.2	180	54.8	88.3	300	91.4	87.2
79	24.1	88.3	190	57.9	87.7	310	94.5	87.2
90	27.4	88.3	201	61.3	88.3	321	97.8	87.2
101	30.8	88.3	210	64.0	88.3	329	100.3	87.2
110	33.5	88.3	219	66.8	88.3	337	102.7	87.2

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Test hole TX-1. Lat 45°22'03" N., long 111°43'41" W. Reported well depth, 338 ft (103.02 m) below LSD. Water level in pipe perforated below depth 328 ft (100 m), 20.2 ft (6.15 m) below LSD. MP is top of 2 in. pipe 2.05 ft (0.62 m) above LSD. Site elevation 4,922 ft (1,500.1 m) above sea level. Date of measurements, May 1, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	15.6	81	24.7	88.3	207	63.1	88.9
11	3.4	34.4	89	27.1	88.9	215	65.5	88.3
20	6.1	65	98	29.9	88.9	224	68.3	88.3
28	8.5	73.3	107	32.6	88.9	233	71.0	88.3
32	9.8	77.2	116	35.4	88.9	245	74.7	88.3
37	11.3	80.0	128	39.0	88.9	254	77.4	88.3
41	12.5	81.7	137	41.7	88.9	267	81.4	88.3
46	14.0	83.9	145	44.2	88.9	275	83.8	88.3
55	16.7	85.5	154	46.9	88.9	284	86.6	88.3
59	17.9	86.7	163	49.7	88.9	293	89.3	88.3
64	19.5	87.2	176	53.6	88.9	305	92.9	88.3
68	20.7	87.8	185	56.4	88.9	314	95.7	88.3
72	21.9	88.3	198	60.3	88.9	322	98.1	88.3
						328	100.0	88.3

Test hole TX-1. Lat 45°22'03" N., long 111°43'41" W. Reported well depth, 338 ft (103.02 m) below LSD. Water level in pipe perforated below depth 328 ft (100 m), 19.8 ft (6.02 m) below LSD. MP is top of 2 in. pipe 1.8 ft (0.55 m) above LSD. Site elevation 4,922 ft (1,500.1 m) above sea level. Date of measurements, July 26, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	27.1	110	33.5	88.9	220	67.1	88.1
10	3.0	41.0	120	36.6	88.9	230	70.1	88.0
20	6.1	67.5	130	39.6	88.8	240	73.2	88.0
30	9.1	75.2	140	42.7	88.8	250	76.2	87.9
40	12.2	81.5	150	45.7	88.8	260	79.2	87.8
50	15.2	85.1	160	48.8	88.8	270	82.3	87.8
60	18.3	86.8	170	51.8	88.8	280	85.3	87.6
70	21.3	88.1	180	54.9	88.7	290	88.4	87.5
80	24.4	88.7	190	57.9	88.6	300	91.4	87.4
90	27.4	88.8	200	60.9	88.4	310	94.5	87.2
100	30.5	88.9	210	64.0	88.2	320	97.5	87.2
						322	98.1	87.1

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Test hole TX-1. Lat 45°22'03" N., long 111°43'41" W. Reported well depth, 338 ft (103.02 m) below LSD. Water level in pipe perforated below depth 328 ft (100 m), 20.2 ft (6.15 m) below LSD. MP is top of 2 in. pipe 1.8 ft (0.55 m) above LSD. Site elevation 4,922 ft (1,500.1 m) above sea level. Date of measurements, Oct. 4, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	29.5	110	33.5	90.3	220	67.1	89.5
10	3.0	49.2	120	36.6	90.3	230	70.1	89.5
20	6.1	70.8	130	39.6	90.2	240	73.2	89.4
30	9.1	77.4	140	42.7	90.2	250	76.2	89.4
40	12.2	82.2	150	45.7	90.2	260	79.2	89.3
50	15.2	86.3	160	48.8	90.2	270	82.3	89.2
60	18.3	88.2	170	51.8	90.2	280	85.3	89.1
70	21.3	89.4	180	54.9	90.1	290	88.4	89.0
80	24.4	90.2	190	57.9	89.9	300	91.4	88.9
90	27.4	90.3	200	60.9	89.7	310	94.5	88.8
100	30.5	90.3	210	64.0	89.6	320	97.5	88.7
						323	98.6	88.7

Test hole TX-2. Lat 45°22'03" N., long 111°43'48" W. Reported well depth, 426 ft (129.8 m) below LSD. Water level, 18.9 ft (5.76 m) below LSD. MP is top of 2 in. pipe 0.7 ft (0.21 m) above LSD. Site elevation 4,920 ft (1,499.5 m) above sea level. Date of measurements, Apr. 30, 1978. Screened interval 381-383 ft (116.13-116.74 m). Cemented Apr. 29, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	13.6	140	42.7	55.5	280	85.4	65.2
11	3.4	12.3	150	45.8	56.6	291	88.7	66.0
20	6.1	14.8	160	48.6	57.8	300	91.6	65.7
30	9.1	18.2	170	51.8	58.8	310	94.4	65.6
41	12.5	22.3	181	55.0	60.0	320	97.7	66.6
51	15.4	26.2	191	58.1	61.5	331	100.8	67.9
60	18.4	30.6	201	61.2	63.1	341	103.8	68.8
70	21.5	33.9	211	64.3	63.6	351	106.9	69.8
80	24.4	37.8	221	67.2	63.9	360	109.6	70.4
91	27.8	42.1	230	70.2	64.3	370	112.8	71.5
101	30.6	45.2	240	73.2	64.5	375	114.4	72.8
111	33.9	48.0	251	76.4	64.5	380	115.8	70.9
120	36.7	50.9	260	79.3	64.7	382	116.5	67.9
131	39.9	54.0	270	82.2	64.7	383	116.7	67.4

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Test hole TX-2. Lat 45°22'03" N., long 111°43'48" W. Reported well depth, 426 ft (129.8 m) below LSD. Water level, 19.2 ft (5.85 m) below LSD. MP is top of 2 in. pipe 0.7 ft (0.21 m) above LSD. Site elevation 4,920 ft (1,499.5 m) above s a level. Date of measurements, May 3, 1978. Screened interval 381-383 ft (116.13-116.74 m).

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	17.9	140	42.7	56.1	280	85.5	66.8
10	3.0	13.8	150	45.8	57.0	290	88.3	67.2
20	6.1	13.6	160	48.7	58.4	300	91.5	67.5
30	9.1	16.3	171	52.0	59.4	310	94.4	67.8
40	12.2	19.5	181	55.3	60.8	320	97.7	68.5
50	15.2	23.4	190	57.9	62.3	331	100.8	69.4
60	18.4	28.3	200	60.9	64.3	339	103.4	69.9
70	21.3	31.9	211	64.3	64.7	351	106.9	70.7
80	24.4	36.6	221	67.4	65.0	361	109.9	71.3
90	27.3	41.1	231	70.3	65.3	366	111.5	71.8
100	30.6	44.6	241	73.4	65.5	371	113.1	72.0
111	33.9	47.8	251	76.5	65.7	376	114.6	71.9
122	37.1	51.2	261	79.6	65.9	380	115.8	70.8
130	39.6	54.2	271	82.6	66.2	383	116.7	69.8

Test hole TX-2. Lat 45°22'03" N., long 111°43'48" W. Reported well depth, 426 ft (129.8 m) below LSD. Water level, 18.9 ft (5.75 m) below LSD. MP is top of 2 in. pipe 0.7 ft (0.21 m) above LSD. Site elevation 4,920 ft (1,499.5 m) above sea level. Date of measurements, Oct. 5, 1978. Screened interval 381-383 ft (116.13-116.74 m).

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	11.4	131	39.9	55.9	260	79.2	67.7
9	2.7	11.7	140	42.7	57.3	271	82.6	67.8
21	6.4	14.2	151	46.0	58.5	280	85.3	68.3
30	9.1	16.2	161	49.1	59.9	289	88.1	68.9
41	12.5	19.9	169	51.5	60.8	300	91.4	69.4
50	15.2	23.3	180	54.8	62.2	310	94.5	69.4
61	18.6	28.5	190	57.9	64.4	321	97.8	70.5
70	21.3	31.9	200	60.9	65.5	330	100.6	70.6
80	24.4	37.5	210	64.0	65.5	341	103.9	71.6
89	27.1	41.6	219	66.7	66.1	350	106.7	71.7
100	30.5	45.2	231	70.4	67.2	361	110.0	72.2
109	33.2	48.0	240	73.2	67.2	370	112.8	72.8
120	36.6	52.3	251	76.5	67.3	381	116.1	73.3

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Test hole TX-3. Lat 45°21'42" N., long 111°43'22" W. Reported well depth, 183 ft (55.78 m) below LSD. Open hole (in drilling mud). Site elevation 4,904 ft (1,494.8 m) above sea level. Date of measurements, May 2, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
11	3.4	7.4	60	18.3	8.5	110	33.5	9.5
20	6.1	7.2	71	21.6	8.5	120	36.6	9.8
30	9.1	7.8	81	24.7	8.9	131	39.9	10.0
39	11.9	8.1	90	27.4	9.2	140	42.7	10.2
50	15.2	8.4	101	37.8	9.4	150	45.7	10.3
						155	47.2	10.4

Test hole TX-3. Lat 45°21'42" N., long 111°43'22" W. Reported well depth, 183 ft (55.78 m) below LSD. Water level, 1.25 ft (0.38 m) below LSD. MP is top of 2 in. pipe 0.5 ft (0.15 m) above LSD. Site elevation 4,904 ft (1,494.9 m) above sea level. Date of measurements, May 4, 1978. Screened interval 181-183 ft (55.17-55.78 m). Cemented 24 hours before measuring.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	2.0	60	18.3	8.3	120	36.6	10.4
10	3.0	6.4	70	21.4	8.6	127	38.8	10.6
21	6.2	6.6	80	24.4	9.1	132	40.2	10.8
30	9.1	7.5	91	27.8	9.5	141	42.8	11.4
40	12.3	7.6	100	30.6	9.8	151	46.0	11.8
49	15.0	7.9	111	33.8	9.9	161	49.0	11.9
						169	51.6	11.2
						174	53.2	10.7

Test hole TX-3. Lat 45°21'42" N., long 111°43'22" W. Reported well depth, 183 ft (55.78 m) below LSD. Water level, 0.2 ft (0.06 m) below LSD. MP is top of 2 in. pipe 0.5 ft (0.15 m) above LSD. Site elevation 4,904 ft (1,494.8 m) above sea level. Date of measurements, May 26, 1978. Screened interval 181-183 ft (55.17-55.78 m).

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
1	0.31	9.3	60	18.3	7.5	120	36.7	9.0
10	3.0	5.6	70	21.3	7.8	131	40.0	9.3
20	6.1	5.5	81	24.6	8.0	140	42.7	9.6
30	9.2	6.4	90	27.4	8.2	150	45.7	9.9
41	12.4	7.0	101	30.7	8.5	161	48.9	10.2
51	15.5	7.3	111	33.9	8.8	170	51.7	10.3
						179	54.6	10.4

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Test hole TX-3. Lat 45°21'42" N., long 111°43'22" W. Reported well depth, 183 ft (55.78 m) below LSD. Water level, 0.40 ft (0.12 m) above LSD. MP is top of 2 in. pipe 0.5 ft (0.15 m) above LSD. Site elevation 4,904 ft (1,494.8 m) above sea level. Date of measurements, Oct. 5, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	11.4	50	15.2	8.3	120	36.6	10.1
10	3.0	11.2	59	18.0	8.6	130	39.6	10.5
15	4.6	8.5	70	21.3	8.8	140	42.7	10.7
22	6.7	8.7	82	25.2	9.1	150	45.7	10.9
25	7.6	8.2	91	27.7	9.3	159	48.5	11.1
30	9.1	7.9	100	30.5	9.6	171	52.1	11.3
41	12.5	8.0	110	33.5	9.8	177	53.9	11.5

Test hole TX-4. Lat 45°21'44" N., long 111°43'39" W. Reported well depth, 285 ft (86.87 m) below LSD. Water level, flowing. MP is top of 2 in. pipe 2.0 ft (0.61 m) above LSD. Site elevation 4,906 ft (1,495.3 m) above sea level. Date of measurements, May 26, 1978. Screened interval 283-285 ft (86.26-86.87 m).

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	8.3	101	30.8	9.6	200	61.1	12.8
10	3.0	5.6	110	33.5	10.0	210	64.1	13.1
20	6.1	5.8	120	36.7	10.3	221	67.2	13.5
30	9.2	6.2	131	40.0	10.6	232	70.7	13.7
40	12.2	7.3	140	42.7	11.0	241	73.6	14.0
50	15.1	7.9	151	46.0	11.3	250	76.3	14.2
60	18.4	8.3	160	48.7	11.6	261	79.6	14.5
70	21.3	8.7	170	51.8	12.0	271	82.5	14.5
80	24.3	9.0	180	55.0	12.3	282	85.8	14.7
91	27.6	9.3	190	58.0	12.5	285	86.9	14.9

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Test hole TX-4. Lat 45°21'44" N., long 111°43'39" W. Reported well depth, 285 ft (86.87 m) below LSD. Water level, flowing. MP is top of 2 in. casing 4.0 ft (1.23 m) above LSD. Site elevation 4,906 ft (1,495.3 m) above sea level. Date of measurements, Oct. 4, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	10.2	99	30.2	10.6	200	61.0	13.7
10	3.0	9.2	110	33.5	10.8	209	63.7	14.0
19	5.8	8.3	119	36.3	11.2	220	67.1	14.4
31	9.5	7.8	130	39.6	11.6	231	70.4	14.8
40	12.2	8.0	139	42.4	11.9	240	73.2	14.8
49	14.9	8.6	151	46.0	12.2	249	75.9	15.2
61	18.6	9.1	160	48.8	12.5	260	79.3	15.4
70	21.3	9.5	171	52.1	12.9	269	82.0	15.7
79	24.1	9.9	180	54.9	13.2	280	85.3	15.9
90	27.4	10.1	189	57.6	13.5	285	86.9	16.0

Test hole TX-4. Lat 45°21'44" N., long 111°43'39" W. Reported well depth, 285 ft (86.87 m) below LSD. Water level, 4.23 ft (1.29 m) above LSD. MP is top of 2 in. extension 10.27 ft (3.13 m) above LSD. Site elevation 4,906 ft (1,495.3 m) above sea level. Date of measurements, July 25, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	14.6	100	30.5	12.4	190	57.9	15.5
20	6.1	9.0	110	33.5	12.7	200	61.0	15.8
30	9.1	9.1	120	36.6	13.1	210	64.0	16.1
40	12.2	9.7	130	39.6	13.4	220	67.1	16.3
50	15.2	10.4	140	42.7	13.9	230	70.1	16.6
60	18.3	10.9	150	45.7	14.2	240	73.2	16.9
70	21.3	11.2	160	48.8	14.6	250	76.2	17.1
80	24.4	11.7	170	51.8	14.9	260	79.3	17.5
90	27.4	12.1	180	54.9	15.1	270	82.3	17.8
						274	83.5	17.9

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Test hole TX-5. Lat 45°22'01" N., long 111°43'29" W. Reported well depth, 323 ft (98.5 m) below LSD. Water level, 10.4 ft (3.17 m) above LSD. MP is 2 in. extension pipe 11.9 ft (3.63 m) above LSD. Site elevation 4,896 ft (1,491.8 m) above sea level. Date of measurements, May 26, 1978. Screened interval 319-321 ft (97.23-97.84 m).

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	10.6	110	33.6	51.6	221	67.3	57.0
10	3.0	10.5	121	36.8	52.7	231	70.3	57.3
20	6.1	11.1	131	40.0	53.5	240	73.2	57.6
30	9.1	17.3	140	42.8	53.9	251	76.5	58.1
40	12.2	26.2	151	46.0	54.3	260	79.3	58.3
51	15.4	32.8	161	49.1	54.7	270	82.2	58.5
61	18.4	37.5	171	52.2	55.2	281	85.5	58.8
70	21.4	41.3	180	54.8	55.6	290	88.4	59.0
80	24.2	44.9	190	57.9	55.9	299	91.2	59.5
91	27.6	47.6	200	60.9	56.3	310	94.4	59.8
101	30.7	49.8	211	64.3	56.7	321	97.8	60.3
						322	98.1	60.4

Test hole TX-5. Lat 45°22'01" N., long 111°43'29" W. Reported well depth, 323 ft (98.5 m) below LSD. Water level, 11.91 ft (3.63 m) above LSD. MP is 2 in. extension pipe 16.7 ft (5.09 m) above LSD. Site elevation 4,896 ft (1,491.8 m) above sea level. Date of measurements, Oct. 4, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	9.9	121	36.9	45.8	240	73.2	48.8
20	6.1	13.3	141	43.0	46.4	260	79.2	49.2
41	12.5	28.6	161	49.1	47.0	282	85.9	49.6
59	18.0	36.2	180	54.9	47.5	300	91.4	49.8
81	24.7	41.7	200	61.0	47.9	319	97.2	61.9
101	30.8	44.5	220	67.1	48.3	320	97.5	61.9

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Test hole TX-5. Lat 45°22'01" N., long 111°43'29" W. Reported well depth, 323 ft (98.5 m) below LSD. Water level, flowing after perforation 133-140 ft (40.54-42.67 m). MP is 1.4 ft (0.43 m) above LSD. Site elevation 4,896 ft (1,491.8 m) above sea level. Date of measurements, Nov. 28, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	3.9	70	21.3	47.1	140	42.7	57.2
10	3.0	9.1	80	24.4	50.1	150	45.7	57.6
20	6.1	11.5	90	27.4	52.1	160	48.8	58.1
30	9.1	22.3	100	30.5	54.2	170	51.8	58.5
40	12.2	32.3	110	33.5	55.3	180	54.8	58.7
50	15.2	38.4	120	36.6	56.2	190	57.9	58.9
60	18.3	43.5	130	39.6	56.9	200	61.0	59.3
						210	64.0	59.7

Test hole TX-5. Lat 45°22'01" N., long 111°43'29" W. Reported well depth, 323 ft (98.5 m) below LSD. Water level, 2.9 ft (0.9 m) below LSD 30 hrs after developing perforated intervals 133-140 (40.54-42.67 m). MP is 1.4 ft (0.43 m) above LSD. Site elevation 4,896 ft (1,491.8 m) above sea level. Date of measurements, Dec. 5, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	7.2	110	33.5	54.3	210	64.0	58.8
10	3.0	11.1	120	36.6	55.3	220	67.1	59.2
20	6.1	12.5	130	39.6	56.0	230	70.1	59.6
30	9.1	22.2	135	41.1	56.3	240	73.2	59.8
40	12.2	31.5	140	42.7	56.5	250	76.2	60.0
50	15.2	37.8	150	45.7	56.8	260	79.2	60.2
60	18.3	42.3	160	48.8	57.3	270	82.3	60.4
70	21.3	46.0	170	51.8	57.7	280	85.3	60.6
80	24.4	48.9	180	54.9	58.0	290	88.4	60.7
90	27.4	51.2	190	57.9	58.3	300	91.4	60.8
100	30.5	52.9	200	61.0	58.5	303	92.3	61.1
						306	93.3	61.4

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Test hole TX-5. Lat 45°22'01" N., long 111°43'29" W. Reported well depth, 323 ft (98.5 m) below LSD. Water level, 4.36 ft (1.3 m) below LSD. MP is 1.4 ft (0.43 m) above LSD. Site elevation 4,896 ft (1,491.8 m) above sea level. Date of measurements, March 25, 1980. Perforated interval 133-140 ft (40.54-42.67 m).

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	0	110	33.5	53.8	210	64.0	59.0
10	3.0	5.3	120	36.6	55.0	220	67.1	59.4
20	6.1	8.8	130	39.6	55.8	230	70.1	59.7
30	9.1	15.1	135	41.2	56.3	240	73.2	60.0
40	12.2	25.8	140	42.7	56.5	250	76.2	60.3
50	15.2	33.5	150	45.7	56.8	260	79.2	60.5
60	18.3	38.9	160	48.8	57.3	270	82.3	60.8
70	21.3	43.2	170	51.8	57.7	280	85.3	61.0
80	24.4	46.9	180	54.9	58.1	290	88.4	61.2
90	27.4	49.7	190	57.9	58.3	300	91.4	61.4
100	30.5	51.9	200	61.0	58.6	307	93.6	61.9

Test hole TX-6. Lat. 45°22'25" N., long 111°44'17" W. Reported well depth, 200 ft (60.96 m) below LSD. Water level, flowing 10 ft (3.0 m) above LSD. Site elevation 4,908 ft (1,496.1 m) above sea level. Date of measurements, May 26, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	8.0	70	21.4	14.0	141	42.8	16.8
10	3.2	8.2	80	24.4	14.5	150	45.6	17.1
20	6.2	9.4	90	27.4	14.9	161	49.2	17.1
31	9.5	11.6	100	30.4	15.3	170	51.9	17.3
39	11.9	12.1	110	33.4	15.7	180	55.0	17.5
50	15.2	12.7	120	36.6	16.2	190	57.9	17.7
61	18.5	13.5	130	39.6	16.5	198	60.4	17.9

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Test hole TX-6. Lat 45°22'25" N., long 111°44'17" W. Reported well depth, 200 ft (60.96 m) below LSD. Water level, flowing. MP is top of 2 in. pipe 11.1 ft (3.38 m) above LSD. Site elevation 4,908 ft (1,496.1 m) above sea level. Date of measurements, July 11, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	14.6	71	21.6	15.4	140	42.7	18.4
10	3.0	10.8	80	24.4	15.9	151	46.0	18.7
21	6.4	11.1	91	27.7	18.8	160	48.8	19.0
30	9.1	12.3	100	30.5	16.9	171	52.1	19.3
40	12.2	13.2	111	33.8	17.3	180	54.9	19.6
50	15.2	14.0	120	36.6	17.7	191	58.2	19.9
60	18.3	14.6	131	39.9	18.1	198	60.3	20.1

Test hole TX-6. Lat 45°22'25" N., long 111°44'17" W. Reported well depth, 200 ft (60.96 m) below LSD. Water level, flowing. MP is top of 2 in. pipe 11.1 ft (3.38 m) above LSD. Site elevation 4,908 ft (1,496.1 m) above sea level. Date of measurements, Oct. 6, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
2	0.6	11.0	71	21.6	14.4	140	42.7	17.4
11	3.4	11.0	80	24.4	14.9	149	45.4	17.7
21	6.4	11.0	92	28.0	15.5	160	48.8	18.1
32	9.1	11.5	100	30.5	15.9	171	52.1	18.5
39	11.9	12.2	109	33.2	16.2	180	54.9	18.7
51	15.5	12.9	120	36.6	16.7	189	57.6	18.7
60	18.3	13.7	131	39.9	17.1	198	60.2	19.1

Test hole TX-7. Lat 45°21'49" N., long 111°44'12" W. Measured well depth, 50 ft (15.24 m) below LSD. Water level, 11.91 ft (3.63 m) below LSD. MP is top of 6 in. casing 0.7 ft (0.21 m) above LSD. Site elevation 4,928 ft (1,502.17 m) above sea level. Date of measurements, Nov. 1, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	12.8	15	4.6	11.9	30	9.1	11.6
9	2.7	12.5	21	6.4	12.0	41	12.5	10.5
						50	15.2	10.6

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Test hole TX-8. Lat 45°22'49" N., long 111°43'39" W. Reported well depth, 43 ft (13.1 m) below LSD. Water level, 17.8 ft (5.42 m) below LSD (before deepening). MP is top of 6 in. casing 0.5 ft (0.15 m) above LSD. Site elevation 4,928 ft (1,489.1 m) above sea level. Date of measurements, Dec. 27, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	0.2	20	6.1	11.0	40	12.2	11.6
10	3.0	2.8	31	9.4	11.4	43	13.0	11.6

Test hole TX-8. Lat 45°22'49" N., long 111°43'39" W. Reported well depth, 330 ft (100.6 m) below LSD. Water level, 2.0 ft (0.61 m) below LSD, pipe sealed. Casing cemented Apr. 6, 1979. MP is top of 2 in. pipe 4.2 ft (1.28 m) above LSD. Site elevation 4,886 ft (1,489.1 m) above sea level. Date of measurements, Apr. 9, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
2	0.6	7.6	89	27.1	14.3	200	61.0	20.9
11	3.4	8.1	103	31.4	15.1	213	64.9	21.7
20	6.1	10.5	112	34.1	15.4	221	67.4	22.4
29	8.8	12.1	121	36.9	15.8	230	70.1	23.2
37	11.3	13.8	130	39.6	16.3	242	73.8	24.3
42	12.8	13.8	139	42.4	16.8	251	76.5	24.9
46	14.0	13.1	152	46.3	17.5	264	80.5	25.9
51	15.5	13.0	161	49.1	18.1	273	83.2	26.9
59	18.0	13.1	170	51.8	18.7	282	85.9	28.0
72	21.9	13.5	183	55.8	19.8	290	88.4	29.0
80	24.4	13.9	191	58.2	20.4	300	91.4	30.4

Test hole TX-8. Lat 45°22'49" N., long 111°43'39" W. Reported well depth, 330 ft (100.6 m) below LSD. Water level, 2.0 ft (0.61 m) below LSD, pipe sealed. MP is top of 2 in. pipe 4.2 ft (1.28 m) above LSD. Site elevation 4,886 ft (1,489.1 m) above sea level. Date of measurements, Apr. 16, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	11.3	101	30.8	14.5	200	61.0	20.8
10	3.0	7.9	110	33.5	15.1	212	64.6	21.7
19	5.8	9.0	119	36.3	15.4	222	67.7	22.4
32	9.7	11.4	132	40.2	16.0	230	70.1	23.1
41	12.5	12.6	141	43.0	16.6	239	72.8	23.9
50	15.2	12.3	150	45.7	17.2	252	76.8	25.0
62	18.9	12.8	162	49.4	18.0	260	79.2	25.5
71	21.6	13.0	170	51.8	18.7	269	82.0	26.5
80	24.4	13.4	183	55.8	19.7	280	85.3	27.9
93	28.3	14.1	191	58.2	20.2	290	73.2	28.8
						298	90.8	30.0

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Test hole TX-8. Lat 45°22'49" N., long 111°43'39" W. Reported well depth, 330 ft (100.6 m) below LSD. Water level, 1.7 ft (0.52 m) below LSD, pipe sealed. MP is top of 2 in. pipe 4.2 ft (1.28 m) above LSD. Site elevation 4,886 ft (1,489.1 m) above sea level. Date of measurements, Apr. 30, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	9.0	100	30.5	14.4	200	61.0	20.8
12	3.7	8.3	109	33.2	14.9	213	64.9	21.6
21	6.4	9.6	122	37.2	15.5	221	67.4	22.3
30	9.1	10.9	131	39.9	15.9	230	70.1	23.0
39	11.9	12.0	140	42.7	16.5	239	72.8	23.9
52	15.8	12.3	152	46.3	17.2	251	76.5	24.8
61	18.6	12.5	161	49.1	17.8	260	79.2	25.5
70	21.3	12.9	170	51.8	18.6	272	82.9	26.8
83	25.3	13.5	183	55.8	19.6	281	85.6	27.9
92	28.0	14.0	191	58.2	20.2	290	88.4	28.9
						298	90.8	29.8

Test hole TX-8. Lat 45°22'49" N., long 111°43'39" W. Reported well depth, 330 ft (100.6 m) below LSD. Water level, 2.47 ft (0.75 m) below LSD, pipe sealed. MP is top of 2 in. pipe 4.2 ft (1.28 m) above LSD. Site elevation 4,886 ft (1,489.1 m) above sea level. Date of measurements, Sept. 27, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	17.6	100	30.5	13.1	200	61.0	19.6
10	3.0	11.2	110	33.5	13.6	210	64.0	20.2
20	6.1	10.2	120	36.6	14.1	220	67.1	21.0
30	9.1	9.8	130	39.6	14.6	230	70.1	21.8
40	12.2	10.3	140	42.7	15.2	240	73.2	22.9
50	15.2	10.8	150	45.7	15.9	250	76.2	23.6
60	18.3	11.2	160	48.8	16.5	260	79.3	24.4
70	21.3	11.7	170	51.8	17.2	270	82.3	25.5
80	24.4	12.1	180	54.9	18.0	280	85.3	26.6
90	27.4	12.5	190	57.9	19.0	290	88.4	27.8
						296	90.3	28.7

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Test hole TX-8. Lat 45°22'49" N., long 111°43'39" W. Reported well depth, 330 ft (100.6 m) below LSD. Water level, 7.1 ft (2.16 m) below LSD. MP is top of 2 in. pipe 4.2 ft (1.28 m) above LSD. Site elevation 4,886 ft (1,489.1 m) above sea level. Date of measurements, Nov. 29, 1979. Perforated intervals 200-210 ft (60.96-64.01 m) and 250-260 ft (76.2-79.25 m).

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	5.5	80	24.4	13.1	160	48.8	17.4
10	3.0	10.3	90	27.4	13.5	170	51.8	18.2
20	6.1	11.1	100	30.5	14.1	180	54.9	19.9
30	9.1	11.2	110	33.5	14.6	190	57.9	19.8
40	12.2	11.4	120	36.6	15.1	200	61.0	20.4
50	15.2	11.9	130	39.6	15.5	205	62.5	20.6
60	18.3	12.3	140	42.7	16.0	210	64.0	21.0
70	21.3	12.7	150	45.7	16.7	220	67.1	21.7
						230	70.1	22.5
						234	71.3	23.0

Test hole TX-9. Lat 45°21'51" N., long 111°44'00" W. Reported well depth, 407 ft (124.05 m) below LSD. Water level, 0.96 ft (0.29 m) below LSD, pipe sealed. MP is top of 2 in. pipe 3.9 ft (1.19 m) above LSD. Site elevation 4,928 ft (1,501.9 m) above sea level. Date of measurements, Apr. 30, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	9.6	133	40.5	19.6	273	83.2	32.7
9	2.7	7.8	142	43.3	20.4	282	85.9	33.5
18	5.5	8.8	151	46.0	21.1	290	88.4	34.4
22	6.7	10.0	160	48.8	21.9	302	92.0	35.4
31	9.4	11.7	173	52.7	22.7	310	94.5	35.9
40	12.2	12.9	182	55.5	23.2	319	97.2	36.4
49	14.9	13.7	195	59.4	24.3	332	101.2	37.4
63	19.2	14.7	204	62.2	25.2	341	103.9	38.1
72	21.9	15.4	213	64.9	26.2	353	107.6	39.0
81	24.7	16.1	221	67.4	27.2	362	110.3	39.6
89	27.1	16.7	230	70.1	28.1	370	112.8	40.0
98	29.9	17.3	243	74.1	29.3	383	116.7	41.0
111	33.8	18.1	251	76.5	30.3	392	119.5	41.5
120	36.6	18.7	260	79.2	31.3	398	121.3	42.0

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Test hole TX-9. Lat 45°21'51" N., long 111°44'00" W. Reported well depth, 407 ft, (124.05 m) below LSD. Water level, 4.6 ft (1.4 m) below LSD, pipe sealed. MP is top of 2 in. pipe 3.9 ft (1.19 m) above LSD. Site elevation 4,928 ft (1,489.1 m) above sea level. Date of measurements, Sept. 19, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	3.2	129	39.3	19.0	263	80.2	31.6
12	3.6	13.3	141	43.0	19.9	272	82.9	32.6
20	6.1	10.7	151	46.0	20.7	280	85.3	33.6
32	9.7	10.8	160	48.8	21.5	290	88.4	34.5
41	12.5	11.7	170	51.8	22.3	302	92.0	35.7
50	15.2	12.7	183	55.8	23.2	311	94.8	36.2
60	18.3	13.7	192	58.5	23.8	320	97.5	36.8
72	21.9	14.7	201	61.3	24.7	330	100.6	37.8
81	24.7	15.5	210	64.0	25.7	342	103.6	38.5
90	27.4	16.3	223	68.0	27.2	351	107.0	39.1
103	31.4	17.2	232	70.7	28.2	360	109.7	39.8
110	33.5	17.8	241	73.5	29.0	373	113.7	40.6
120	36.6	18.4	250	76.2	30.1	382	116.4	41.2
						390	118.9	41.7
						394	120.1	42.0

Test hole TX-9. Lat 45°21'51" N., long 111°44'00" W. Reported well depth, 407 ft, (124.05 m) below LSD. Water level, 24.02 ft (7.32 m) below LSD. MP is top of 2 in. pipe 3.9 ft (1.19 m) above LSD. Site elevation 4,928 ft (1,489.1 m) above sea level. Date of measurements, Nov. 29, 1979. Perforated intervals 320-330 ft (97.54-100.58 m) and 370-380 ft (112.78-115.82 m).

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	8.7	140	42.7	19.5	280	85.3	33.0
10	3.0	8.3	150	45.7	20.3	290	88.4	34.0
20	6.1	8.6	160	48.8	21.1	300	91.4	35.1
30	9.1	10.7	170	51.8	21.9	305	93.0	35.5
40	12.2	11.3	180	54.9	22.5	310	94.5	35.8
50	15.2	12.3	190	57.9	23.3	315	96.0	36.2
60	18.3	13.3	200	61.0	24.1	320	97.5	36.5
70	21.3	14.2	210	64.0	25.2	325	99.1	36.8
80	24.4	15.1	220	67.1	26.4	330	100.6	37.2
90	27.4	15.9	230	70.1	27.6	340	103.6	38.0
100	30.5	16.7	240	73.2	28.6	350	106.7	38.7
110	33.5	17.4	250	76.2	29.6	360	109.7	39.4
120	36.6	18.0	260	79.2	30.8	370	112.8	39.9
130	39.6	18.8	270	82.3	31.9	375	114.3	40.3
						380	115.8	40.8
						390	118.9	41.6

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Test hole TX-10. Lat 45°22'52" N., long 111°41'49" W. Measured well depth, 875.5 ft, (266.9 m) below LSD. Measurements, 41 hours after cementing casing, pipe sealed. MP is top of 2 in. pipe 0.8 ft (0.24 m) above LSD. Site elevation 4,860 ft (1,481.33 m) above sea level. Date of measurements, Oct. 10, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	9.5	290	88.4	15.5	580	176.8	20.8
10	3.0	10.8	300	91.4	15.0	590	179.8	20.7
20	6.1	10.4	310	94.5	15.5	600	182.9	21.2
30	9.1	10.8	320	97.5	15.3	610	185.9	21.5
40	12.2	11.6	330	100.6	16.0	620	189.0	21.3
50	15.2	12.1	340	103.6	16.2	630	192.0	21.3
60	18.3	11.9	350	106.7	16.4	640	195.1	21.5
70	21.3	11.9	360	109.7	16.2	650	198.1	21.8
80	24.4	12.4	370	112.8	16.4	660	201.2	22.0
90	27.4	12.6	380	115.8	16.7	670	204.2	22.3
100	30.5	14.4	390	118.9	17.0	680	207.3	22.5
110	33.5	13.7	400	121.9	17.3	690	210.3	22.7
120	36.6	12.8	410	125.0	17.4	700	213.4	23.0
130	39.6	12.9	420	128.0	17.4	710	216.4	23.2
140	42.7	13.1	430	131.1	17.7	720	219.5	23.5
150	45.7	13.3	440	134.1	17.9	730	222.5	23.8
160	48.8	13.3	450	137.2	17.9	740	225.5	24.1
170	51.8	13.3	460	140.2	18.1	750	228.6	24.6
180	54.9	13.3	470	143.3	18.3	760	231.6	24.9
190	57.9	13.3	480	146.3	18.6	770	234.7	25.2
200	61.0	13.5	490	149.4	18.8	780	237.7	25.6
210	64.0	13.6	500	152.4	19.2	790	240.8	25.9
220	67.1	13.8	510	155.4	19.5	800	243.8	26.2
230	70.1	13.9	520	158.5	19.5	810	246.9	26.2
240	73.2	13.9	530	161.5	19.7	820	249.9	26.3
250	76.2	14.1	540	164.6	20.0	830	253.0	26.7
260	79.2	14.3	550	167.6	19.8	840	256.0	27.2
270	82.3	14.4	560	170.7	20.1	850	259.1	27.3
280	85.3	15.2	570	173.7	20.6	860	262.1	27.6
						870	265.2	28.3
						876	266.9	28.7

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Test hole TX-10. Lat 45°22'52" N., long 111°41'49" W. Reported well depth, 875.5 ft (266.9 m) below LSD. Pipe sealed. MP is top of 2 in. pipe 0.8 ft (0.24 m) above LSD. Site elevation 4,860 ft (1,481.33 m) above sea level. Date of measurements, Nov. 7, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	5.4	280	85.3	12.6	560	170.7	18.4
10	3.0	7.2	290	88.4	12.8	570	173.7	18.6
20	6.1	8.5	300	91.4	12.9	580	176.8	18.9
30	9.1	8.5	310	94.5	13.0	590	179.8	19.1
40	12.2	8.6	320	97.5	13.1	600	182.9	19.3
50	15.2	8.6	330	100.6	13.3	610	185.9	19.6
60	18.3	9.0	340	103.6	13.6	620	189.0	19.9
70	21.3	9.3	350	106.7	13.8	630	192.0	20.1
80	24.4	9.8	360	109.7	14.0	640	195.1	20.4
90	27.4	10.1	370	112.8	14.2	650	198.1	20.6
100	30.5	10.2	380	115.8	14.4	660	201.2	20.9
110	33.5	10.4	390	118.9	14.6	670	204.2	21.1
120	36.6	10.4	400	121.9	14.9	680	207.3	21.4
130	39.6	10.5	410	125.0	15.1	690	210.3	21.6
140	42.7	10.7	420	128.0	15.4	700	213.4	21.8
150	45.7	10.9	430	131.1	15.5	710	216.4	22.1
160	48.8	11.0	440	134.1	15.7	720	219.5	22.4
170	51.8	11.1	450	137.2	15.9	730	222.5	22.7
180	54.9	11.2	460	140.2	16.0	740	225.5	23.1
190	57.9	11.3	470	143.3	16.4	750	228.6	23.4
200	61.0	11.4	480	146.3	16.6	760	231.6	23.8
210	64.0	11.5	490	149.4	16.9	770	234.7	24.1
220	67.1	11.7	500	152.4	17.2	780	237.7	24.4
230	70.1	11.8	510	155.4	17.3	790	240.8	24.8
240	73.2	11.9	520	158.5	17.5	800	243.8	25.1
250	76.2	12.1	530	161.5	17.7	810	246.9	25.5
260	79.2	12.3	540	164.6	18.0	820	249.9	25.8
270	82.3	12.4	550	167.6	18.2	830	253.0	26.2
						840	256.0	26.6
						848	258.5	26.9

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Test hole TX-10. Lat 45°22'52" N., long 111°41'49" W. Reported well depth, 875.5 ft (266.9 m) below LSD. Water level, flowing. Static head 10 ft (3.05 m) above LSD. MP is top of 2 in. pipe 0.8 ft (0.24 m) above LSD. Site elevation 4,860 ft (1,481.33 m) above sea level. Date of measurements, Nov. 29, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	5.0	240	73.2	13.1	480	146.3	17.7
10	3.0	8.1	250	76.2	13.3	490	149.4	17.9
20	6.1	9.2	260	79.2	13.4	500	152.4	18.1
30	9.1	9.5	270	82.3	13.6	510	155.4	18.4
40	12.2	9.7	280	85.3	13.8	520	158.5	18.6
50	15.2	10.0	290	88.4	13.9	530	161.5	18.8
60	18.3	10.3	300	91.4	14.0	540	164.6	19.0
70	21.3	10.7	310	94.5	14.1	550	167.6	19.3
80	24.4	11.0	320	97.5	14.3	560	170.7	19.5
90	27.4	11.3	330	100.6	14.5	570	173.7	19.7
100	30.5	11.4	340	103.6	14.7	580	176.8	20.0
110	33.5	11.5	350	106.7	14.9	590	179.8	20.2
120	36.6	11.6	360	109.7	15.1	600	182.9	20.5
130	39.6	11.7	370	112.8	15.3	610	185.9	20.7
140	42.7	11.9	380	115.8	15.6	620	189.0	20.9
150	45.7	12.0	390	118.9	15.8	630	192.0	21.2
160	48.8	12.2	400	121.9	16.0	640	195.1	21.4
170	51.8	12.3	410	125.0	16.2	650	198.1	21.7
180	54.9	12.4	420	128.0	16.4	660	201.2	21.9
190	57.9	12.5	430	131.1	16.7	670	204.2	22.1
200	61.0	12.6	440	134.1	16.9	680	207.3	22.4
210	64.0	12.7	450	137.2	17.1	690	210.3	22.6
220	67.1	12.8	460	140.2	17.3	700	213.4	22.9
230	70.1	13.0	470	143.3	17.5	710	216.4	23.2
						720	219.5	23.4
						730	222.5	23.8

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Test hole TX-11. Lat 45°22'14" N., long 111°43'28" W. Reported well depth, 625.5 ft (190.5 m) below LSD. Water level (in drilling mud). Site elevation 4,886 ft (1,489.3 m) above sea level. Date of measurements, Sept. 26, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	35.6	200	61.0	81.1	400	121.9	82.2
100	30.5	71.7	300	91.4	80.6	500	152.4	85.6
						600	182.9	88.3
						615	187.5	88.3

Test hole TX-11. Lat 45°22'14" N., long 111°43'28" W. Reported well depth, 625.5 ft (190.5 m) below LSD. Water level, slight flow, pipe sealed but leaking. MP is 1.2 ft (0.37 m) above LSD, 41 hrs after casing cemented. Site elevation 4,886 ft (1,489.34 m) above sea level. Date of measurements, Sept. 28, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	21.3	200	61.0	81.9	400	121.9	87.8
10	3.0	34.2	210	64.0	83.6	412	125.0	88.9
20	6.1	44.9	220	67.1	84.2	420	128.0	89.1
30	9.1	52.4	230	70.1	84.6	430	131.1	89.8
40	12.2	58.3	240	73.2	85.1	440	134.1	90.7
50	15.2	62.7	250	76.2	85.4	450	137.2	91.1
60	18.3	67.2	260	79.2	85.2	460	140.2	91.1
70	21.3	69.2	270	82.3	85.7	470	143.3	91.2
80	24.4	71.5	280	85.3	86.9	480	146.3	91.2
90	27.4	73.6	290	88.4	87.0	490	149.4	91.1
100	30.5	75.5	300	91.4	86.4	500	152.4	91.1
110	33.5	76.4	310	94.5	86.4	510	155.4	91.1
120	36.6	77.6	320	97.5	86.5	520	158.5	91.4
130	39.6	79.3	330	100.6	86.9	530	161.5	91.7
140	42.7	79.9	340	103.6	86.9	540	164.6	92.1
150	45.7	80.0	350	106.7	86.9	550	167.6	92.4
160	48.8	80.9	360	109.7	87.2	560	170.7	92.8
170	51.8	81.3	370	112.8	87.1	570	173.7	92.9
180	54.9	81.3	380	115.8	87.3	580	176.8	92.8
190	57.9	81.7	390	118.9	87.4	590	179.8	93.0
						597	181.9	93.2

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Test hole TX-11. Lat 45°22'14" N., long 111°43'28" W. Reported well depth, 625.5 ft (190.5 m) below LSD. Water level, slight flow (<0.05 gal/min). Static head 36 ft (10.97 m) above LSD. MP is 1.2 ft (0.37 m) above LSD. Site elevation 4,886 ft (1,489.3 m) above sea level. Date of measurements, Oct. 6, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	22.5	200	61.0	85.0	400	121.9	88.4
10	3.0	30.1	210	64.0	85.6	410	125.0	88.6
20	6.1	41.9	220	67.1	86.0	420	128.0	88.9
30	9.1	51.1	230	70.1	86.1	430	131.1	89.2
40	12.2	57.6	240	73.2	86.3	440	134.1	89.4
50	15.2	62.8	250	76.2	86.4	450	137.2	89.7
60	18.3	67.7	260	79.2	86.5	460	140.2	90.1
70	21.3	71.8	270	82.3	86.6	470	143.3	90.6
80	24.4	74.9	280	85.3	86.7	480	146.3	91.1
90	27.4	77.1	290	88.4	86.8	490	149.4	91.5
100	30.5	78.7	300	91.4	86.9	500	152.4	91.9
110	33.5	80.1	310	94.5	87.0	510	155.4	92.2
120	36.6	81.4	320	97.5	87.1	520	158.5	92.4
130	39.6	82.9	330	100.6	87.3	530	161.5	92.6
140	42.7	83.3	340	103.6	87.5	540	164.6	92.8
150	45.7	83.6	350	106.7	87.6	550	167.6	93.1
160	48.8	84.2	360	109.7	87.8	560	170.7	93.3
170	51.8	84.6	370	112.8	88.0	570	173.7	93.6
180	54.9	84.7	380	115.8	88.2	580	176.8	93.7
190	57.9	84.9	390	118.9	88.3	590	179.8	93.8
						600	182.9	93.9
						608	185.3	94.1

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Test hole TX-11. Lat 45°22'14" N., long 111°43'28" W. Reported well depth, 625.5 ft (190.5 m) below LSD. Water level, slight flow (<0.05 gal/min), pipe sealed. Static head 36 ft (10.97 m) above LSD. MP is 1.2 ft (0.37 m) above LSD. Site elevation 4,886 ft (1,489.3 m) above sea level. Date of measurements, Nov. 6, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	17.6	200	61.0	86.0	400	121.9	89.0
10	3.0	26.9	210	64.0	86.3	410	125.0	89.3
20	6.1	41.0	220	67.1	86.6	420	128.0	89.6
30	9.1	51.1	230	70.1	86.7	430	131.1	89.8
40	12.2	57.4	240	73.2	86.7	440	134.1	90.2
50	15.2	63.1	250	76.2	86.9	450	137.2	90.6
60	18.3	67.9	260	79.2	87.0	460	140.2	91.0
70	21.3	72.3	270	82.3	87.1	470	143.3	91.5
80	24.4	75.6	280	85.3	87.1	480	146.3	91.9
90	27.4	77.9	290	88.4	87.2	490	149.4	92.3
100	30.5	79.8	300	91.4	87.3	500	152.4	92.5
110	33.5	81.2	310	94.5	87.4	510	155.4	92.7
120	36.6	82.5	320	97.5	87.5	520	158.5	92.9
130	39.6	83.8	330	100.6	87.6	530	161.5	93.1
140	42.7	84.4	340	103.6	87.8	540	164.6	93.2
150	45.7	84.6	350	106.7	88.0	550	167.6	93.4
160	48.8	85.0	360	109.7	88.1	560	170.7	93.5
170	51.8	85.4	370	112.8	88.3	570	173.7	93.6
180	54.9	85.7	380	115.8	88.5	580	176.8	93.7
190	57.9	85.8	390	118.9	88.7	590	179.8	93.8
						600	182.9	94.0

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Test hole TX-11. Lat 45°22'14" N., long 111°43'28" W. Reported well depth, 625.5 ft (190.5 m) below LSD. Water level, 40 ft (12.28 m) above LSD, measured while flowing at 8 gal/min from perforations in interval 515-580 ft (156.97-176.78 m). MP is top of 2 in. pipe 1.2 ft (0.37 m) above LSD. Site elevation 4,886 ft (1,489.3 m) above sea level. Date of measurements, Nov. 29, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	89.2	180	54.9	92.5	360	109.7	93.6
10	3.0	90.3	190	57.9	92.6	370	112.8	93.7
20	6.1	91.1	200	61.0	92.6	380	115.8	93.7
30	9.1	91.6	210	64.0	92.7	390	118.9	93.7
40	12.2	91.6	220	67.1	92.7	400	121.9	93.7
50	15.2	91.8	230	70.1	92.8	410	125.0	93.8
60	18.3	91.8	240	73.2	92.8	420	128.0	93.8
70	21.3	91.8	250	76.2	93.0	430	131.1	93.8
80	24.4	91.9	260	79.2	93.0	440	134.1	93.9
90	27.4	92.0	270	82.3	93.1	450	137.2	93.7
100	30.5	92.0	280	85.3	93.2	460	140.2	93.6
110	33.5	92.1	290	88.4	93.3	470	143.3	93.7
120	36.6	92.2	300	91.4	93.3	480	146.3	93.7
130	39.6	92.3	310	94.5	93.3	490	149.4	93.7
140	42.7	92.3	320	97.5	93.4	500	152.4	93.7
150	45.7	92.3	330	100.6	93.5	510	155.4	93.8
160	48.8	92.4	340	103.6	93.5	515	157.0	93.8
170	51.8	92.4	350	106.7	93.6	520	158.5	93.9

Shot hole 1. Lat 45°22'14" N., long 111°43'28" W. Measured well depth, 50.5 ft (15.4 m) below LSD. Water level, flowing 4 gal/min. MP is 0.8 ft (0.24 m) above LSD. Site elevation 4,886 ft (1,489.3 m) above sea level. Date of measurements, Nov. 2, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	27.8	19	5.8	36.9	34	10.4	46.0
10	3.0	31.3	31	9.4	44.2	40	12.2	48.9
						51	15.4	62.1

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Shot hole 3. Lat 45°21'40" N., long 111°44'26" W. Measured well depth, 50 ft (26.2 m) below LSD. Water level, 11.3 ft (3.44 m) below LSD. MP is top of 6 in. casing 0.42 ft (0.13 m) above LSD (before deepening). Site elevation 4,932 ft (1,503.3 m) above sea level. Date of measurements, Nov. 1, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	11.3	19.5	5.9	11.4	41	12.5	10.4
10	3.0	11.2	29	8.8	11.7	50	15.3	10.4

Shot hole 3. Lat 45°21'40" N., long 111°44'26" W. Reported well depth, 86 ft (26.2 m) below LSD. Water level, 10.64 ft (3.24 m) below LSD in 2 in. sealed pipe, and 16.04 ft (4.89 m) below LSD in 6 in. casing (in drilling mud). MP is top of 2 in. pipe 1.4 ft (0.43 m) above LSD. Site elevation 4,932 ft (1,503.3 m) above sea level. Date of measurements, Apr. 9, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	5.7	25	7.6	9.6	50	15.2	10.6
10	3.0	6.2	30	9.1	9.9	60	18.3	10.6
20	6.1	8.3	40	12.2	10.4	70	21.3	10.7
						80	24.4	10.9
						87	26.5	10.9

Shot hole 3. Lat 45°21'40" N., long 111°44'26" W. Reported well depth, 86 ft (26.2 m) below LSD. Water level, 10.98 ft (3.35 m) below LSD, pipe sealed. MP is top of 2 in. pipe 1.4 ft (0.43 m) above LSD. Site elevation 4,932 ft (1,503.3 m) above sea level. Date of measurements, Sept. 27, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	21.4	30	9.1	9.1	60	18.3	9.4
10	3.0	21.4	40	12.2	9.0	70	21.3	9.6
20	6.1	10.8	50	15.2	9.2	80	24.4	9.7
						84	25.6	9.8

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Shot hole 4. Lat 45°22'12" N., long 111°44'02" W. Measured well depth, 47 ft (14.3 m) below LSD. Water level, 12.4 ft (3.78 m) below LSD, pipe sealed. MP is top of 6 in. casing 0.5 ft (0.15 m) above LSD. Site elevation 4,914 ft (1,497.79 m) above sea level. Date of measurements, Nov. 1, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	9.1	14	4.3	10.5	31	9.4	10.8
10	3.0	9.5	19	5.8	11.2	40	12.2	11.0
						47	14.3	11.9

Shot hole 4. Lat 45°22'12" N., long 111°44'02" W. Reported well depth, 142 ft (43.3 m) below LSD. Water level, 2.91 ft (0.89 m) above LSD, pipe sealed. MP is top of 2 in. pipe 3 ft (0.91 m) above LSD. Site elevation 4,914 ft (1,497.79 m) above sea level. Date of measurements, Apr. 30, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	9.9	40	12.2	11.4	93	28.3	17.8
10	3.0	5.6	53	16.2	12.7	102	31.1	18.9
18	5.5	7.2	62	18.9	13.9	111	33.8	20.0
23	7.0	8.1	71	21.6	15.1	120	36.6	21.1
32	9.7	10.1	80	24.4	16.1	132	40.2	22.9
						141	43.0	23.8
						142	43.3	24.0

Shot hole 4. Lat 45°22'12" N., long 111°44'02" W. Reported well depth, 142 ft (43.3 m) below LSD. Water level, 0.3 ft (0.1 m) above LSD, pipe sealed. MP is top of 2 in. pipe 3 ft (0.91 m) above LSD. Site elevation 4,914 ft (1,497.79 m) above sea level. Date of measurements, Sept. 27, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	20.6	50	15.2	11.2	100	30.5	17.6
10	3.0	12.9	60	18.3	12.6	110	33.5	18.9
20	6.1	10.4	70	21.3	13.8	120	36.6	20.2
30	9.1	9.3	80	24.4	15.1	130	39.6	22.7
40	12.2	10.0	90	27.4	16.3	140	42.7	22.8

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Shot hole 5. Lat 45°22'21" N., long 111°43'11" W. Measured well depth, 47 ft (14.3 m) below LSD. Water level, 1.76 ft (0.54 m) below LSD. MP is top of 6 in. casing 0.5 ft (0.15 m) above LSD. Site elevation (1,487.7 m) above sea level. Date of measurements, Dec. 27, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	0.2	20	6.1	14.9	41	12.5	17.4
10	3.0	13.3	32	9.8	16.2	47	14.3	18.9

Cyprus Industrial Minerals Co. Well 1. Lat 45°22'08" N., long 111°43'49" W. Measured well depth, 83 ft (25.3 m) below LSD. Water level, 23.0 ft (7.0 m) below LSD. MP is top of 6 in. casing 1.8 ft (0.55 m) above LSD. Site elevation 4,916 ft (1,498.3 m) above sea level. Date of measurements, Mar. 15, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	9.2	30	9.1	17.4	62	18.9	37.2
13	4.0	10.7	39	11.9	23.2	70	21.3	39.0
21	6.4	13.0	53	16.2	32.8	80	24.4	44.2
						83	25.3	44.2

Cyprus Industrial Minerals Co. Well 2. Lat 45°22'09" N., long 111°43'49" W. Measured well depth, 41 ft (12.5 m) below LSD. Water level, 18.6 ft (5.67 m) below LSD. MP is top of 6 in. casing 1.5 ft (0.46 m) above LSD. Site elevation 4,915 ft (1,498.1 m) above sea level. Date of measurement, Mar. 15, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	5.7	15	4.6	11.9	30	9.1	16.9
5	1.5	6.4	20	6.1	14.0	35	10.7	18.0
10	3.0	9.4	25	7.6	15.4	41	12.5	18.5

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Griffin well. Lat 45°22'26" N., long 111°43'46" W. Measured well depth, 217 ft (66.14 m) below LSD. Water level, 18.4 ft (5.6 m) below LSD. MP is top of 6 in. casing 1.2 ft (0.37 m) above LSD. Site elevation 4,902 ft (1,494.2 m) above sea level. Date of measurements, Mar. 16, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	4.8	83	25.3	18.9	154	46.9	36.1
21	6.4	11.6	92	28.0	21.1	163	49.7	41.3
30	9.1	12.6	101	30.8	23.0	167	50.9	42.6
38	11.6	13.8	110	33.5	24.9	172	52.4	43.4
51	15.5	14.9	119	36.3	25.9	180	54.9	44.8
60	18.3	15.7	132	40.2	27.1	188	57.3	45.0
68	20.7	17.0	141	43.0	29.8	197	60.0	45.0
77	23.5	18.4	150	45.7	34.0	206	62.8	45.0
						210	64.0	45.1
						217	66.1	45.2

Jeffers well. Lat 45°20'43" N., long 111°35'24" W. Measured well depth, 325 ft (99.1 m) below LSD. Water level, dry. MP is top of 6 in. casing 0.7 ft (0.21 m) above LSD. Site elevation 5,565 ft (1,696.2 m) above sea level. Date of measurements, Apr. 12, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	3.8	83	25.3	7.5	211	64.3	8.9
12	3.7	4.6	92	28.0	7.6	232	70.7	8.9
21	6.4	5.9	100	30.5	7.9	249	75.9	9.0
30	9.1	6.4	109	33.2	8.1	271	82.6	9.0
43	13.1	6.5	132	40.2	8.4	288	87.8	8.8
52	15.8	6.7	149	45.4	8.6	306	93.3	9.2
60	18.3	6.9	167	50.9	8.7	314	95.7	9.4
69	21.0	7.2	189	57.6	8.8	325	99.1	9.4

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Matzig well. Lat 45°21'04" N., long 111°45'42" W. Measured well depth, 251 ft (76.51 m) below LSD. Water level, 114.5 ft (34.89 m) below LSD. MP is top of 6 in. casing 0.32 ft (0.10 m) above LSD. Site elevation 5065 ft (1,543.7 m) above sea level. Date of measurements, July 12, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	21.3	81	24.7	11.9	160	48.8	10.5
10	3.0	19.0	90	27.4	11.6	171	52.1	10.6
21	6.4	17.4	101	30.8	11.3	180	54.9	10.8
30	9.1	15.4	110	33.5	11.1	191	58.2	10.9
41	12.5	14.1	121	36.9	10.0	200	61.0	11.0
50	15.2	13.3	130	39.6	10.1	211	64.3	11.1
61	18.6	12.8	141	43.0	10.3	220	67.1	11.1
70	21.3	12.3	151	46.0	10.5	230	70.1	11.2
						240	73.2	11.2
						251	76.5	11.2

McClellan well. Lat 45°20'47" N., long 111°46'10" W. Reported well depth, 275 ft (83.8 m) below LSD. Water level, 38.2 ft (11.6 m) below LSD. MP is top of 6 in. casing 0.8 ft (0.24 m) above LSD. Site elevation 5,440 ft (1,658.1 m) above sea level. Date of measurements, Aug. 14, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	10.8	60	18.3	10.3	160	48.8	11.2
10	3.0	9.9	80	24.4	10.5	180	54.9	11.3
20	6.1	9.9	100	30.5	10.5	200	61.0	11.4
30	9.1	9.9	120	36.6	10.7	220	67.1	11.4
40	12.2	10.3	140	42.7	10.9	240	73.2	11.5
						260	79.2	11.6
						270	82.4	11.6

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Pray well. Lat 45°22'20" N., long 111°43'34" W. Reported well depth, 136 ft (41.45 m) below LSD. Water level, 20.1 ft (6.14 m) below LSD. MP is top of 6 in. casing 1.5 ft (0.46 m) above LSD. Site elevation 4,908 ft (1,495.9 m) above sea level. Date of measurements, Sept. 27, 1977.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
10	3.0	22.4	51	15.5	23.1	91	27.7	38.7
20	6.1	16.0	60	18.3	25.9	100	30.5	42.8
30	9.1	18.3	71	21.6	30.0	110	33.5	45.6
40	12.2	20.4	80	24.4	33.4	120	36.6	46.8
						132	40.2	47.2
						136	41.4	47.2

Pray Well. Lat 45°22'20" N., long 111°43'34" W. Reported well depth, 136 ft (41.45 m) below LSD. Water level, 19.98 ft (6.09 m) below LSD. MP is top of 6 in. casing 1.5 ft (0.46 m) above LSD. Site elevation 4,908 ft (1,495.9 m) above sea level. Date of measurements, Oct. 12, 1977.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
20	6.1	17.7	55	16.8	22.3	90	27.4	36.5
25	7.6	16.7	60	18.3	24.0	95	29.0	38.7
30	9.1	17.2	65	19.8	25.3	100	30.5	40.3
35	10.6	17.7	70	21.3	27.5	105	32.0	42.6
40	12.2	18.7	75	22.9	29.6	110	33.5	44.3
45	13.6	19.7	80	24.4	31.7	115	35.1	45.5
50	15.2	20.7	85	25.9	33.7	120	36.6	45.9
						125	38.1	46.1
						130	39.6	46.1

Thexton cold well. Lat 45°21'58" N., long 111°43'35" W. Measured well depth, 30 ft (9.1 m) below LSD. Water level, 0.04 ft (0.012 m) below LSD. MP is top of 6 in. casing 2.4 ft (0.73 m) above LSD. Site elevation 4,897 ft (1,492.61 m) above sea level. Date of measurements, Oct. 9, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	13.5	10	3.0	16.1	20	6.1	17.8
5	1.5	15.1	15	4.6	17.0	25	7.6	18.4
						30	9.1	19.3

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Toth well. Lat 45°22'27" N., long 111°43'44" W. Reported well depth, 210 ft (64.01 m) below LSD. Water level, 23.5 ft (7.16 m) below LSD. MP is top of 6 in. casing 1.7 ft (0.52 m) above LSD. Site elevation 4,903 ft (1,494.4 m) above sea level. Date of measurements, Mar. 22, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	10.8	66	20.1	19.5	131	39.9	32.6
11	3.4	7.7	70	21.3	19.9	140	42.7	34.3
20	6.1	8.9	82	25.0	21.5	145	44.2	36.0
32	9.7	12.3	87	26.5	23.5	151	46.0	36.7
41	12.5	13.1	91	27.7	24.0	162	49.4	38.7
46	14.0	15.1	102	31.1	26.1	171	52.1	40.1
52	15.8	15.8	111	33.8	27.8	182	55.5	41.9
61	18.6	18.1	122	37.2	30.5	191	58.2	42.7
						202	61.6	42.9
						207	63.1	42.9

Toth well. Lat 45°22'27" N., long 111°43'44" W. Reported well depth, 210 ft (64.01 m) below LSD. Water level, 24.2 ft (7.37 m) below LSD. MP is top of 6 in. casing 1.7 ft (0.52 m) above LSD. Site elevation 4,903 ft (1,494.4 m) above sea level. Date of measurement July 11, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	30.5	72	21.9	18.2	140	42.7	33.4
10	3.0	23.5	80	24.4	20.1	152	46.3	35.9
22	6.7	20.6	90	27.4	21.9	160	48.8	37.4
31	9.4	20.0	101	30.8	24.2	171	52.1	39.3
40	12.2	12.0	112	34.1	26.8	180	54.8	40.7
51	15.5	13.7	120	36.6	29.0	191	58.2	41.9
60	18.3	16.0	131	39.9	31.7	202	61.1	42.0
						210	64.0	42.1

Yenny well. Lat 45°21'58" N., long 111°43'40" W. Reported well depth, 124 ft (38.1 m) below LSD. Water level, 17.6 ft (5.36 m) below LSD. MP is top of 6 in. casing 1.2 ft (0.37 m) above LSD. Site elevation 4,924 ft (1,501.0 m) above sea level. Date of measurement Aug. 19, 1977.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	24.1	40	12.2	27.8	80	24.4	35.0
10	3.0	23.5	52	15.8	32.8	92	28.0	35.5
19	5.8	20.5	60	18.3	33.9	100	30.5	35.8
31	9.4	23.6	72	21.9	34.5	109	33.2	36.0
						120	36.6	36.1
						122	37.2	36.1

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Ennis (Thexton) Hot Springs (area 16)--Continued

Yenny well. Lat 45°21'58" N., long 111°43'40" W. Reported well depth, 124 ft (38.1 m) below LSD. Water level, 17.45 ft (5.32 m) below LSD. MP is top of 6 in. casing 1.2 ft (0.37 m) above LSD. Site elevation 4,924 ft (1,501.0 m) above sea level. Date of measurements, Oct. 12, 1977.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
10	3.0	23.5	30	9.2	31.6	71	21.7	35.0
16	5.0	23.6	40	12.1	33.3	80	24.4	35.2
22	6.6	26.7	50	15.2	34.4	91	27.8	35.4
26	8.0	29.4	60	18.3	34.8	100	30.6	35.5
						110	33.5	35.6
						119	36.3	34.3

Yenny well. Lat 45°21'58" N., long 111°43'40" W. Reported well depth, 125 ft (38.1 m) below LSD. Water level, 22.4 ft (6.83 m) below LSD. MP is top of 6 in. casing 1.2 ft (0.37 m) above LSD. Site elevation 4,924 ft (1,501.0 m) above sea level. Date of measurements, Mar. 7, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	4.4	40	12.2	33.3	81	24.7	34.1
10	3.0	9.5	51	15.5	33.6	90	27.4	34.2
12	3.7	18.5	60	18.3	33.6	101	30.8	34.3
31	9.4	33.3	72	21.9	33.8	110	33.5	34.2
						121	36.9	32.6
						124	37.8	32.6

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Bozeman (Ferris, Matthews) Hot Springs (area 18)

Bozeman hot spring well. Lat 45°39'37" N., long 111°11'10" W. Reported well depth, 460 ft (140.21 m) below LSD. Water level, flowing. MP is top of casing 1.0 ft (0.30 m) above LSD. Site elevation 4,679 ft (1,426.2 m) above sea level. Date of measurements, Nov. 30, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	35.4	150	45.7	52.0	300	91.4	51.7
10	3.0	49.1	160	48.8	51.9	310	94.5	51.7
20	6.1	51.5	170	51.8	51.9	320	97.5	51.7
30	9.1	57.0	180	54.9	51.8	330	100.6	51.7
40	12.2	58.7	190	57.9	51.8	340	103.6	51.7
50	15.2	58.8	200	61.0	51.8	350	106.7	51.7
60	18.3	58.8	210	64.0	51.8	360	109.7	51.7
70	21.3	58.8	220	67.1	51.8	370	112.8	51.7
80	24.4	58.7	230	70.1	51.7	380	115.8	51.7
90	27.4	58.6	240	73.2	51.7	390	118.9	52.1
100	30.5	58.4	250	76.2	51.7	400	121.9	53.5
110	33.5	58.2	260	79.2	51.7	410	125.0	54.3
120	36.6	56.6	270	82.3	51.8	420	128.0	54.7
130	39.6	52.3	280	85.3	51.7	430	131.1	55.0
140	42.7	52.1	290	88.4	51.7	440	134.1	55.1
						444	135.2	55.3

Bozeman hot spring well. Lat. 45°39'37" N., Long. 111°11'10" W. Measured well depth 434 ft (132.3 m) below LSD. Water level, 22.75 ft (6.93 m) above LSD. MP is top of extention 23.5 ft (7.16 m) above LSD. Site elevation 4,679 ft (1,426.2 m) above sea level. Date of measurements, May 7, 1980.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
23.5	7.2	13.6	160	48.8	55.7	0	0	
13.5	4.1	14.8	170	51.8	55.7	10	3.0	56.3
3.5	1.1	45.2	180	54.9	55.7	30	9.1	56.4
0	0	48.5	190	57.9	55.7	50	15.2	56.4
10	3.0	55.8	200	61.0	55.7	75	22.9	56.4
20	6.1	56.8	210	64.0	55.7	100	30.5	56.4
30	9.1	57.0	220	67.1	55.7	125	38.1	56.3
40	12.2	57.0	230	70.1	55.7	150	45.7	55.2
50	15.2	56.8	240	73.2	55.7	160	48.8	55.9
60	18.3	56.8	250	76.2	55.7	165	50.3	55.9
70	21.3	56.7	260	79.2	55.7	170	51.8	55.8
80	24.4	56.7	280	85.3	55.7	172	52.4	55.5
90	27.4	56.8	300	91.4	55.7	173	52.7	55.1
100	30.5	56.7	320	97.5	55.7	175	53.3	55.1
110	33.5	56.5	340	103.6	55.7	200	61.0	55.2
120	36.6	55.9	360	109.7	55.7	250	76.2	55.1
125	38.1	55.8	380	115.8	55.7	300	91.4	55.1
130	39.6	55.7	400	121.9	55.7	350	106.7	55.2
140	42.7	55.7	420	128.0	55.7	400	121.9	55.2
150	45.7	55.7	434	132.3	55.7	420	128.0	55.2
						434	132.3	55.2

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Alhambra Hot Springs (area 19)

Rasmussen well 1. Lat 46°29'44" N., long 111°57'36" W. Measured well depth, 278 ft (84.73 m) below LSD. Water level, 10.93 ft (3.33 m) below LSD. MP is 1.35 ft (0.41 m) above LSD. Site elevation 4,140 ft (1,261.9 m) above sea level. Date of measurements, June 21, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	21.7	92	27.9	8.7	181	55.2	9.5
10	3.0	17.1	100	30.5	8.8	190	57.9	9.6
21	6.4	8.6	109	33.2	8.9	201	61.3	9.7
30	9.1	8.4	120	36.7	9.0	210	64.0	9.7
39	11.9	8.5	130	39.5	9.0	221	67.2	9.8
51	15.6	8.5	141	42.8	9.1	232	70.8	10.3
60	18.3	8.5	150	45.7	9.2	241	73.5	10.6
71	21.6	8.7	161	49.1	9.3	250	76.2	10.8
80	24.4	8.7	170	51.8	9.3	261	79.4	10.9
						271	82.6	11.1
						278	84.8	11.2

Rasmussen well 2. Lat 46°29'43" N., long 111°57'42" W. Measured well depth, 134.1 ft (40.9 m) below LSD. Water level, 5.44 ft (1.7 m) below LSD. MP is 0.64 ft (0.2 m) above LSD. Site elevation 4,145 ft (1,263.4 m) above sea level. Date of measurements, June 22, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	19.0	51	15.4	7.1	102	31.0	7.6
10	3.0	7.8	60	18.2	7.1	111	33.7	7.8
22	6.7	6.6	71	21.6	7.3	119	36.3	7.8
31	9.3	6.5	80	24.4	7.5	130	39.6	7.8
40	12.1	7.0	91	27.7	7.4	134	40.9	7.9

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Alhambra Hot Springs (area 19)--Continued

Rasmussen well 3. Lat 46°29'39" N., long 111°57'48" W. Measured well depth, 216.0 ft (65.8 m) below LSD. Water level, 1.79 ft (0.55 m) below LSD. MP is 1.25 ft (0.38 m) above LSD. Site elevation 4,144 ft (1,263.1 m) above sea level. Date of measurements, June 22, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	18.6	71	21.8	9.1	141	43.0	9.5
10	3.0	8.7	80	24.4	9.1	150	45.7	9.5
22	6.6	8.8	90	27.4	9.2	161	49.1	9.8
31	9.4	8.8	101	30.7	9.2	170	51.8	9.6
40	12.2	9.0	110	33.5	9.4	182	55.3	9.7
52	15.7	9.0	121	36.9	9.9	190	58.0	9.7
60	18.3	9.0	130	39.6	10.0	202	61.5	9.8
						210	64.1	10.1
						216	65.8	10.3

Rasmussen well 4 (on hill). Lat 46°29'43" N., long 111°58'32" W. Measured well depth, 214 ft (65.2 m) below LSD. Water level, 25.05 ft (7.64 m) below LSD. No casing. Site elevation 4,420 ft (1,347.2 m) above sea level. Date of measurements, Aug. 20, 1977.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	25.7	70	21.3	10.5	142	43.3	11.0
12	3.7	25.3	79	24.1	10.6	151	46.0	11.1
21	6.4	22.9	91	27.7	10.7	160	48.8	11.1
32	9.9	9.3	99	30.2	10.7	171	52.1	11.2
41	12.5	9.8	111	33.8	10.9	182	55.5	11.3
50	15.2	10.1	122	37.2	10.9	191	58.2	11.3
61	18.6	10.3	131	39.9	11.0	202	61.6	11.4
						211	64.3	11.4
						214	65.2	11.4

Table 6.--*Subsurface temperatures in selected water wells and test hole*--Continued

Alhambra Hot Springs (area 19)--Continued

Rasmussen well 5 (near Prickly Pear Creek). Lat 46°29'42" N., long 111°57'57" W. Reported well depth, 135 ft (41.1 m) below LSD. Water level, 3.94 ft (1.2 m) below LSD. MP is 0.5 ft (0.15 m) above LSD. Site elevation 4,160 ft (1,268 m) above sea level. Date of measurements, Aug. 20, 1977.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	20.7	50	15.2	8.5	102	31.1	9.6
10	3.0	10.7	62	18.9	8.9	111	33.8	9.7
21	6.4	8.2	71	21.6	9.1	120	36.6	9.8
30	9.1	8.1	82	25.0	9.3	131	39.9	10.0
41	12.5	8.3	91	27.7	9.4	133	40.5	10.0

Rasmussen well 6 (dairy well). Lat 46°29'59" N., long 111°58'54" W. Reported well depth, 125 ft (38.1 m) below LSD. Water level, 6.35 ft (1.9 m) below LSD. MP is 0.5 ft (0.15 m) above LSD. Site elevation 4,520 ft (1,377.7 m) above sea level. Date of measurements, Aug. 20, 1977.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	28.4	42	12.8	8.9	79	24.1	9.3
12	3.7	9.6	50	15.2	9.0	91	27.7	9.3
21	6.4	8.6	62	18.9	9.1	100	30.5	9.3
33	10.1	8.6	70	21.3	9.2	111	33.8	9.4
						120	36.6	9.7
						122	37.2	9.7

Rasmussen well 7 (park entrance). Lat 46°29'49" N., long 111°57'36" W. Measured well depth, 207 ft (63.1 m) below LSD. Water level, 10.35 ft (3.15 m) below MP. MP is 0.5 ft (0.15 m) above LSD. Site elevation 4,150 ft (1,264.9 m) above sea level. Date of measurements, Aug. 20, 1977.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	25.8	70	21.3	10.5	140	42.7	10.3
11	3.4	10.7	81	24.7	10.5	152	46.3	10.4
21	6.4	10.2	90	27.4	10.4	161	49.1	10.4
30	9.1	10.0	99	30.2	10.5	170	51.8	10.4
41	12.5	10.3	111	33.8	10.4	181	55.2	10.5
52	15.8	10.4	120	36.6	10.4	189	57.6	10.5
61	18.6	10.4	132	40.2	10.4	201	61.3	10.8
						207	63.1	10.8

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Alhambra Hot Springs (area 19)--Continued

Rasmussen well 8 (north Well) Lat 46°29'55" N., long 111°57'55" W. Measured well depth, 170 ft (51.8 m) below LSD. Water level, 29.9 ft (9.11 m) below LSD. MP is 1.2 ft (0.37 m) above LSD. Site elevation 4,290 ft (1,307.6 m) above sea level. Date of measurements, Aug. 20, 1977.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	24.9	62	18.9	9.7	120	36.6	10.3
10	3.0	21.6	70	21.3	9.9	132	40.2	10.3
21	6.4	15.1	80	24.4	10.1	140	42.7	10.3
33	10.1	9.1	91	27.7	10.2	149	45.4	10.3
42	12.8	9.0	100	30.5	10.2	160	48.8	10.3
50	15.2	9.3	111	33.8	10.2	170	51.8	10.5

Conoco test hole 1-6. Lat 46°27'04" N., long 112°04'33" W. Measured well depth, 152 ft (46.3 m) below LSD. Water level, no data. Site elevation 5,530 ft (1,685.5 m) above sea level. Date of measurements, Oct. 23, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	16.7	49	14.9	11.9	100	30.5	10.2
9	2.7	15.8	61	18.6	11.2	109	33.2	9.8
19	5.8	15.0	70	21.3	10.7	121	36.9	9.6
31	9.4	13.9	79	24.1	10.5	130	39.6	9.4
40	12.2	12.6	91	27.7	10.3	141	43.0	9.3
						152	46.3	9.2

Conoco test hole 1-7. Lat 46°28'09" N., long 112°02'58" W. Measured well depth, 152 ft (46.3 m) below LSD. Water level, no data. Site elevation 5,520 ft (1,682.5 m) above sea level. Date of measurements, Oct. 23, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	22.8	51	15.5	12.8	101	30.8	9.7
9	2.7	19.0	60	18.3	11.8	110	33.5	9.5
21	6.4	15.7	71	21.6	11.4	121	36.9	9.4
30	9.1	14.5	80	24.4	10.9	130	39.6	9.3
39	11.9	13.6	89	27.1	10.1	141	43.0	8.4
						150	45.7	8.2
						152	46.3	8.2

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Alhambra Hot Springs (area 19)--Continued

Conoco test hole 17-3. Lat 46°27'04" N., long 112°00'31" W. Measured well depth, 148 ft (45.1 m) below LSD. Water level, dry. Site elevation 5,000 ft (1,524 m) above sea level. Date of measurements, Oct. 13, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	10.6	49	14.9	9.5	101	30.8	8.5
11	3.4	11.3	60	18.3	9.1	110	33.5	8.5
20	6.1	10.8	69	21.0	8.8	119	36.3	8.7
31	9.4	10.3	81	24.7	8.6	130	39.6	8.7
40	12.2	9.8	90	27.4	8.5	139	42.4	8.7
						148	45.1	8.7

Conoco test hole 17-4. Lat 46°27'01" N., long 112°00'26" W. Measured well depth, 153 ft (46.6 m) below LSD. Water level, dry. Site elevation 4,940 ft (1,505.7 m) above sea level. Date of measurements, Oct. 13, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	10.6	50	15.2	9.5	100	30.5	9.0
10	3.0	11.3	61	18.6	9.2	110	33.5	9.0
21	6.4	10.9	71	21.6	9.1	120	36.6	9.0
30	9.1	10.5	79	24.1	9.0	129	39.3	9.0
41	12.5	10.0	91	27.7	9.0	141	43.0	9.0
						150	45.7	9.1
						153	46.6	9.1

Conoco test hole 17-5. Lat 46°26'59" N., long 112°00'27" W. Measured well depth, 134 ft (40.8 m) below LSD. Water level, no data. Site elevation 4,920 ft (1,499.6 m) above sea level. Date of measurements, Oct. 23, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	16.0	51	15.5	11.4	101	30.8	9.1
9	2.7	15.0	61	18.6	10.9	110	33.5	8.3
21	6.4	14.0	70	21.3	10.3	121	36.9	8.1
29	8.8	13.3	79	24.1	9.8	130	39.6	8.0
40	12.2	12.0	91	27.7	9.5	134	40.8	7.9

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Alhambra Hot Springs (area 19)--Continued

Conoco test hole 17-6. Lat 46°27'01" N., long 112°00'43" W. Measured well depth, 320 ft (97.5 m) below LSD. Water level, dry. Site elevation 5,480 ft (1,670.3 m) above sea level. Date of measurements, Oct. 17, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	19.9	100	30.5	9.0	201	61.3	9.1
21	6.4	12.8	121	36.9	8.9	221	67.4	9.2
40	12.2	9.6	141	43.0	8.9	241	73.5	9.3
60	18.3	9.2	162	49.4	8.9	261	79.6	9.4
80	24.4	9.1	181	55.2	9.0	281	85.6	9.5
						301	91.7	9.7
						320	97.5	10.1

Conoco test hole 18-1. Lat 46°26'16" N., long 112°01'54" W. Measured well depth, 49 ft (14.9 m) below LSD. Water level, no data. Site elevation 5,330 ft (1,624.7 m) above sea level. Date of measurements, Oct. 23, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	10.4	19	5.8	10.2	40	12.2	9.7
10	3.0	10.3	31	9.4	9.8	49	14.9	9.5

Conoco test hole 18-2. Lat 46°26'16" N., long 112°01'59" W. Measured well depth, 62 ft (18.9 m) below LSD. Water level, 57 ft (17.4 m) below LSD. Site elevation 5,330 ft (1,624.6 m) above sea level. Date of measurements, Oct. 23, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	11.8	19	5.8	11.2	40	12.2	9.7
10	3.0	11.6	31	9.4	10.3	51	15.5	9.5
						60	18.3	8.8
						62	18.9	8.8

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Broadwater (Helena) Hot Springs (area 20)

Broadwater well 4. Lat 46°35'44" N., long 112°06'43" W. Measured well depth, 240 ft (73.2 m) below LSD. Water level, 5.6 ft (1.71 m) below LSD. MP is top casing 0.5 ft (0.15 m) above LSD. Site elevation 4,035 ft (1,229.9 m) above sea level. Date of measurements, Apr. 10, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0.5	0.2	34.7	80	24.4	40.6	160	48.8	46.4
10	3.0	15.0	90	27.4	43.1	170	51.8	47.6
20	6.1	17.9	100	30.5	43.5	180	54.9	48.9
30	9.1	22.0	110	33.5	43.9	190	57.9	49.8
40	12.2	26.1	120	36.6	44.2	200	61.0	50.8
50	15.2	29.1	130	39.6	44.5	210	64.0	51.8
60	18.3	31.1	140	42.7	44.8	220	67.1	52.3
70	21.3	36.0	150	45.7	45.6	230	70.1	53.1
						240	73.2	53.3

Broadwater well 4. Lat 46°35'44" N., long 112°06'43" W. Reported well depth, 240 ft (73.2 m) below LSD. Water level, 5.48 ft (1.67 m) below LSD. MP is top of casing 0.5 ft (0.15 m) above LSD. Site elevation 4,035 ft (1,229.9 m) above sea level. Date of measurements, May 2, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
2	0.6	21.2	81	24.6	43.1	161	48.9	47.2
11	3.2	16.9	90	27.6	44.9	166	50.5	48.0
22	6.7	20.2	100	30.5	45.2	171	52.1	48.3
30	9.3	23.8	111	33.9	45.4	176	53.6	49.1
40	12.2	27.9	122	37.1	45.6	181	55.1	49.4
50	15.1	31.0	130	39.6	45.8	192	58.5	50.5
61	18.7	35.0	141	42.8	46.0	202	61.4	51.5
65	19.8	37.0	145	44.2	46.5	211	64.4	52.3
71	21.7	39.1	152	46.2	46.6	221	67.5	52.7
						224	68.3	53.5

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Broadwater (Helena) Hot Springs (area 20)--Continued

Broadwater well 4. Lat 46°35'44" N., long 112°06'43" W. Reported well depth, 240 ft (73.2 m) below LSD. Water level, 6.81 ft (2.1 m) below LSD. MP is top of casing 0.5 ft (0.15 m) above LSD. Site elevation 4,035 ft (1,229.9 m) above sea level. Date of measurements, May 25, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	25.0	48	14.6	34.7	100	30.5	47.5
4	1.2	23.0	52	15.8	35.8	110	33.5	47.7
8	2.4	22.4	56	17.1	37.0	120	36.6	47.9
12	3.7	23.3	60	18.3	38.9	130	39.6	48.0
16	4.9	24.4	64	19.5	40.5	140	42.7	48.3
20	6.1	25.5	68	20.7	42.2	150	45.7	48.6
24	7.3	27.4	72	21.9	43.4	160	48.8	48.9
28	8.5	28.7	76	23.2	45.4	170	51.8	49.3
32	9.8	29.7	80	24.4	46.8	180	54.9	49.8
36	11.0	31.2	84	25.6	47.2	190	57.9	50.3
40	12.2	32.8	88	26.8	47.3	200	61.0	50.7
44	13.4	33.5	90	27.4	47.4	210	64.0	50.8
						212	64.6	50.9

Broadwater well 5. Lat 46°35'52" N., long 112°06'38" W. Reported well depth, 260 ft (79.2 m) below LSD. Water level, 82.85 ft (25.3 m) below LSD. MP is top of casing 0.4 ft (0.12 m) above LSD. Site elevation 4,137 ft (1,261.0 m) above sea level. Date of measurements, June 20, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
1	0.3	23.8	92	28.0	14.7	170	51.8	18.0
20	6.1	20.1	100	30.5	15.1	182	55.3	18.5
30	9.1	18.0	110	33.5	15.5	190	57.9	18.8
40	12.2	17.3	121	36.9	15.9	201	61.2	19.3
50	15.2	16.6	130	39.6	16.2	212	64.6	19.7
62	18.9	16.0	142	43.1	16.8	221	67.2	20.0
70	21.4	15.7	150	45.7	17.0	230	70.0	20.4
80	24.4	15.7	162	49.3	17.6	241	73.5	20.9
						250	76.2	21.1
						255	77.7	21.2

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Broadwater (Helena) Hot Springs (area 20)--Continued

Broadwater well 6. Lat 46°35'45" N., long 112°06'40" W. Reported well depth, 228 ft (69.5 m) below LSD. Water level, 0.20 ft (0.06 m) above LSD. MP is top of 10 in. casing 1.3 ft (0.40 m) above LSD. Site elevation 4,033 ft (1,229.3 m) above sea level. Date of measurements, Apr. 10, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	35.0	50	15.2	67.2	110	33.5	67.2
7	2.1	61.1	60	18.3	67.2	120	36.6	67.2
11	3.4	64.6	70	21.3	67.2	130	39.6	67.2
20	6.1	66.2	80	24.4	67.2	140	42.7	67.2
30	9.1	66.9	90	27.4	67.2	150	45.7	67.2
40	12.2	67.2	100	30.5	67.2	160	48.8	67.2

Broadwater well 6. Lat 46°35'45" N., long 112°06'40" W. Reported well depth, 265 ft (80.8 m) below LSD. Water level, 1.8 ft (0.55 m) above LSD. MP is top of 5 in. casing 2.4 ft (0.73 m) above LSD. Flowing 15 gal/min from annulus between 6 in. and 8 in. casings 1.3 ft (0.40 m) above LSD. Site elevation 4,033 ft (1,229.3 m) above sea level. Date of measurements, Apr. 14, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	65.3	110	33.6	67.9	191	58.1	67.8
10	3.0	67.1	120	36.6	67.8	201	61.1	67.8
20	6.2	67.3	125	38.0	68.0	206	62.7	67.4
30	9.2	67.4	130	39.6	68.2	211	64.3	67.3
40	12.2	67.4	130	39.7	68.1	216	65.7	67.2
51	15.5	67.4	140	42.7	67.7	221	67.3	66.9
60	18.4	67.4	147	44.7	67.8	226	68.7	66.8
71	21.6	67.4	150	45.8	67.8	231	70.3	66.7
81	24.6	67.4	155	47.3	67.7	240	73.2	66.4
90	27.6	67.4	161	49.1	67.6	251	76.4	66.2
94	28.8	67.5	170	51.8	67.7	255	77.9	66.0
100	30.6	67.7	181	55.0	67.7	260	79.2	65.9
						264	80.5	65.9

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Broadwater (Helena) Hot Springs (area 20)--Continued

Broadwater well 6. Lat 46°35'45" N., long 112°06'40" W. Reported well depth, 265 ft (80.8 m) below LSD. Water level, 1.0 ft (.30 m) above LSD. MP is top of 10 in. casing 1.3 ft (0.40 m) above LSD. Site elevation 4,033 ft (1,299.3 m) above sea level. Date of measurements, May 2, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	61.3	70	21.4	67.4	171	52.2	67.3
11	3.3	64.7	81	24.7	67.4	180	54.8	67.4
15	4.6	65.9	90	27.5	67.4	190	58.0	67.4
19	5.9	66.4	99	30.3	67.5	200	61.1	67.2
26	7.9	67.0	110	33.6	67.5	212	64.6	67.0
30	9.2	67.0	121	36.9	67.5	222	67.5	66.7
35	10.9	67.3	132	40.1	67.5	231	70.5	66.4
40	12.3	67.3	140	42.7	67.5	241	73.5	66.3
50	15.1	67.4	150	45.8	67.5	251	76.5	66.1
61	18.5	67.4	161	49.0	67.4	260	79.4	65.9
						264	80.5	65.9

Broadwater well 6. Lat 46°35'45" N., long 112°06'40" W. Reported well depth, 265 ft (80.8 m) below LSD. Water level, flowing at 70 gal/min through perforation into drain 5 ft (1.52 m) below LSD. Site elevation 4,033 ft (1,229.3 m) above sea level. Date of measurements, May 25, 1979.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	34.3	90	27.4	66.4	190	57.9	66.4
5	1.5	66.5	100	30.5	66.4	200	61.0	66.4
10	3.0	66.5	110	33.5	66.4	210	64.0	66.4
20	6.1	66.6	120	36.6	66.4	220	67.1	66.4
30	9.1	66.5	130	39.6	66.4	230	70.1	66.4
40	12.2	66.5	140	42.7	66.4	240	73.2	66.4
50	15.2	66.5	150	45.7	66.4	242	76.2	66.3
60	18.3	66.5	160	48.8	66.4	243	74.1	66.3
70	21.3	66.5	170	51.8	66.4	244	74.4	66.0
80	24.4	66.5	180	54.9	66.4	245	74.5	65.9
						250	73.8	65.9
						253	77.0	65.9

Table 6.--*Subsurface temperatures in selected wells and test holes*--Continued

Broadwater (Helena) Hot Springs (area 20)--Continued

Gray well 1. Lat 46°34'33" N., long 112°10'44" W. Reported well depth, 208 ft (63.4 m) below LSD. Water level, 19.5 ft (5.94 m) below LSD. MP is top of 6 in. casing 1.4 ft (0.43 m) above LSD. Site elevation 4,290 ft (1,307.6 m) above sea level. Date of measurements, June 21, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	15.0	62	18.9	10.3	120	36.6	10.4
10	3.0	13.7	71	21.5	10.3	131	39.9	10.4
22	6.7	9.9	82	25.0	10.3	140	42.7	10.4
30	9.1	10.1	91	27.7	10.3	151	46.1	10.4
41	12.5	10.2	100	30.4	10.3	160	48.8	10.4
50	15.2	10.3	111	33.7	10.3	172	52.4	10.4
						180	55.0	10.4
						192	58.4	11.3

Gray well 2. Lat 46°34'37" N., long 112°10'45" W. Reported well depth, 220 ft (67.1 m) below LSD. Water level, 6.25 ft (1.9 m) below LSD. MP is top of 6 in. casing 0.6 ft (0.18 m) above LSD. Site elevation 4,320 ft (1316.7 m) above sea level. Date of measurements, June 21, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	24.1	72	21.8	10.3	142	43.3	11.1
12	3.7	9.1	80	24.4	10.4	151	46.0	11.2
21	6.2	8.7	90	27.3	10.6	160	48.8	11.3
30	9.1	9.1	101	30.8	10.7	171	52.1	11.4
42	12.7	9.7	110	33.5	10.8	180	54.8	11.5
50	15.3	9.9	122	37.2	11.0	191	58.2	11.5
60	18.1	10.1	131	39.8	11.0	200	60.9	11.6
						211	64.3	11.7
						219	66.6	11.8

Table 6.--*Subsurface temperatures in selected wells and test holes*--Continued

Broadwater (Helena) Hot Springs (area 20)--Continued

Bellevue Subdivision (Lot 8, Block 310). Lat 46°31'18" N., long 112°04'41" W. Measured well depth, 110 ft (33.5 m) below LSD. Water level, 54.94 ft (16.75 m) below LSD. MP is top of 6 in. casing 1 ft (0.30 m) above LSD. Site elevation 4,200 ft (1,280.2 m) above sea level. Date of measurements, Oct. 7, 1976.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	16.4	42	12.8	15.2	80	24.4	14.9
10	3.0	16.1	51	15.5	15.2	92	28.0	15.0
22	6.7	15.7	60	18.3	14.8	101	30.8	15.1
30	9.1	15.4	72	21.9	14.8	110	33.5	15.1

Bellevue Subdivision (Lots 2 and 3, Block 310). Lat 46°31'18" N., long 112°04'41" W. Measured well depth, 113 ft (34.4 m) below LSD. Water level, 60.64 ft (18.48 m) below LSD. MP is top of 6 in. casing 1.0 ft (0.30 m) above LSD. Site elevation 4,210 ft (1,283.2 m) above sea level. Date of measurements, Oct. 7, 1976.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	20.0	50	15.2	14.7	80	24.4	13.5
20	6.1	17.5	62	18.9	13.1	91	27.7	13.7
41	12.5	15.6	71	21.6	13.4	102	31.1	13.8
						109	33.2	13.8
						113	34.4	13.8

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

Marysville geothermal test well (area 21)

Marysville geothermal test well. Lat 46°45'14" N., long 112°22'33" W. Reported well depth, 6,412 ft (1,954.4 m) below LSD. Water level, 521.25 ft (158.9 m) below MP. MP is top of 9 5/8 in. casing. Site elevation 5,323 ft (1,622.5 m) above sea level. Date of measurements, Aug. 1, 1978.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	17.1	1000	304.8	71.1	2000	609.6	101.1
50	15.2	14.9	1050	320.0	73.3	2050	624.8	101.4
100	30.5	15.4	1100	335.3	75.6	2100	640.1	102.2
150	45.7	17.0	1150	350.5	77.2	2150	655.3	101.7
200	61.0	22.8	1200	365.8	79.4	2200	670.6	103.0
250	76.2	26.0	1250	381.0	81.1	2250	685.8	103.3
300	91.4	30.8	1300	396.2	83.3	2300	701.0	103.9
350	106.7	33.8	1350	411.5	84.4	2350	716.3	104.2
400	121.9	36.4	1400	426.7	86.1	2400	731.5	104.4
450	137.2	39.7	1450	442.0	87.2	2450	746.8	104.4
500	152.4	43.5	1500	457.2	88.9	2500	762.0	105.0
550	167.6	48.6	1550	472.4	90.6	2550	777.2	105.3
600	182.9	50.7	1600	487.7	92.2	2600	792.5	105.3
650	198.1	53.1	1650	502.9	93.3	2650	807.7	105.5
700	213.4	55.8	1700	518.2	95.0	2700	823.0	105.5
750	228.6	58.5	1750	533.4	96.1	2750	838.2	105.5
800	243.8	61.2	1800	548.6	97.8	2800	853.4	105.3
850	259.1	63.9	1850	563.9	98.9	2850	868.7	105.5
900	274.3	67.2	1900	579.1	99.4	2900	883.9	105.5
950	289.6	68.9	1950	594.4	100.6	2920	890.0	105.3

Marysville east well. Lat 46°45'22" N., long 112°22'17" W. Reported well depth, 1,000 ft (304.8 m) below LSD. Water level, 550 ft (167.64 m) below LSD. Site elevation 5,410 ft (1,649.0 m) above sea level. Date of measurements, Nov. 6, 1975.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
0	0	6.3	350	106.7	31.1	700	213.4	57.1
50	15.2	11.7	400	121.9	34.2	750	228.6	61.7
100	30.5	16.5	450	137.2	37.6	800	243.8	65.8
150	45.7	18.5	500	152.4	41.2	850	259.1	70.0
200	61.0	21.9	550	167.6	45.3	900	274.3	74.2
250	76.2	25.0	600	182.9	49.8	950	289.6	78.4
300	91.4	28.1	650	198.1	53.3	982	299.3	80.3

Table 6.--*Subsurface temperatures in selected water wells and test holes*--Continued

White Sulphur (Brewers) Springs (area 22)

First National Bank geothermal well. Lat 46°32'54" N., long 110°54'18", W. Reported well depth, 875 ft (266.7 m) below LSD. Static water level, 5.41 ft (1.65 m) below LSD. Site elevation 5,130 ft (1,563.6 m) above sea level. Date of measurements, July 26, 1978. Logged from 1350 to 1430 hrs.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
10	3.0	32.1	300	91.4	42.3	600	182.9	34.4
100	30.5	43.3	400	121.9	38.4	700	213.4	33.2
200	61.0	43.5	500	152.4	36.0	800	243.8	32.3
						850	259.1	32.0

First National Bank geothermal well. Lat 46°32'54" N., long 110°54'18", W. Reported well depth, 875 ft (266.7 m) below LSD. Site elevation 5,130 ft (1,563.6 m) above sea level. Date of measurements, July 26, 1978. Logged from 1440 to 1550 hrs, while pumping at 67 gal/min.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
50	15.2	44.8	300	91.4	43.3	600	182.9	34.8
100	30.5	44.6	400	121.9	41.1	700	213.4	33.4
200	61.0	43.6	500	152.4	36.7	800	243.8	32.4
						850	259.1	32.0

First National Bank geothermal well. Lat 46°32'54" N., long 110°54'18", W. Reported well depth, 875 ft (266.7 m) below LSD. Site elevation 5,130 ft (1,563.6 m) above sea level. Date of measurements, July 26, 1978. Logged from 1553 to 1620 hrs, while pumping at 67 gal/min.

Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)	Measured depth below LSD (feet)	(meters)	Temperature (°C)
50	15.2	44.9	300	91.4	44.0	550	167.6	36.1
100	30.5	44.9	350	106.7	43.5	600	182.9	35.1
150	45.7	44.6	400	121.9	41.9	650	198.1	34.3
200	61.0	44.1	450	137.2	38.8	700	213.4	33.8
250	76.2	44.1	500	152.4	37.1	750	228.6	33.1
						800	243.8	32.7
						850	259.1	32.2

Table 7.--*Availability of borehole geophysical logs and related data for wells and test holes near Ennis (Thexton) Hot Springs (area 16)*

[Perforated interval: number, gun perforated in interval; 0, open hole below casing; S, screened sand point at base of casing. Quality of log: 1, excellent; 2, good; 3, fair; and 4, poor]

Location		Name	Date of completion	Cored interval (feet)	Casing-depth 6"/2" (feet)	Perforated interval (feet)
Latitude-	Longitude					
45 22 07	111 43 37	Thexton hot well	08-27-73	--	90/--	82-90(0)
			--	--	--	--
45 22 03	111 43 41	Test hole TX-1	10-31-77	332-338	pulled/338	> 328
			--	--	--	78-81
			--	--	--	265-275
			--	--	--	--
			--	--	--	--
			--	--	--	--
			--	--	--	--
			--	--	--	--
			--	--	--	--
45 22 03	111 43 48	Test hole TX-2	04-28-78	423-426	20/383	381-383(S)
			--	--	--	--
			--	--	--	--
45 21 42	111 43 22	Test hole TX-3	05-02-78	180-183	22/179	181-183(S)
			--	--	--	--
			--	--	--	--
			--	--	--	--
45 21 44	111 43 39	Test hole TX-4	05-13-78	280-283	43/283	283-285(S)
			--	--	--	--
			--	--	--	--
45 22 01	111 43 29	Test hole TX-5	05-19-78	320-323	31/321	319-321(S)
			--	--	--	133-140(S)
			--	--	--	--
			--	--	--	--
			--	--	--	--

	Temperature log		Natural gamma log			Self potential and resistivity log		
Date of perforation	Date	Interval (feet)	Date	Interval (feet)	Quality	Date	Interval (feet)	Quality
08-27-73	10-11-77	9-97	10-13-77	0-94	2	--	--	--
--	08-23-78	0-97	--	--	--	--	--	--
12-10-78	11-01-77	0-335	11-04-77	7-100	4	10-29-77	20-329	4
11-15-79	11-03-77	0-337	05-19-78	6-329	4	--	--	--
11-14-79	11-29-77	2-337	11-07-79	6-333	1	--	--	--
--	03-07-78	0-335	11-07-79	30-333	3	--	--	--
--	05-24-78	0-338	11-14-79	3-325	1	--	--	--
--	10-04-78	0-337	--	--	--	--	--	--
--	05-01-79	0-328	--	--	--	--	--	--
--	07-26-79	0-322	--	--	--	--	--	--
--	10-04-79	0-323	--	--	--	--	--	--
04-28-78	04-30-78	0-383	unknown	6-378	3	--	15-425	2
--	05-03-78	0-383	--	--	--	--	--	--
--	10-05-78	0-381	--	--	--	--	--	--
05-02-78	05-02-78	11-155	05-02-78	20-176	3	05-02-78	24-178	3
--	05-04-78	0-174	05-21-78	3-176	3	--	--	--
--	05-26-78	1-179	--	--	--	--	--	--
--	10-05-78	0-177	--	--	--	--	--	--
05-13-78	05-26-78	0-285	05-21-78	1-278	3	05-12-78	50-281	2
--	10-04-78	0-285	04-06-79	4-282	3	--	--	--
--	07-25-79	0-274	07-03-79	6-283	2	--	--	--
05-19-78	05-26-78	0-322	05-21-78	2-316	3	--	60-322	2
11-17-79	10-04-78	0-320	04-06-79	4-318	4	--	--	--
--	11-28-79	0-210	07-03-79	5-319	2	--	--	--
--	12-05-79	0-306	09-28-79	5-317	4	--	--	--
--	03-25-80	0-307	11-07-79	5-318	1	--	--	--

Table 7.--*Availability of borehole geophysical logs and related data for wells and test holes near Ennis (Thexton) Hot Springs (area 16)*--Continued

Location		Name	Date of completion	Cored interval (feet)	Casing depth 6"/2" (feet)	Perforated interval (feet)
Latitude	Longitude					
45 22 25	111 44 17	Test hole TX-6	05-22-78	136-139	29/198	196-198(S)
			--	--	--	--
			--	--	--	--
45 21 49	111 44 12	Test hole TX-7	11-06-78	--	50/--	50(O)
45 22 49	111 43 39	Test hole TX-8	04-04-79	--	40/330	200-210
			--	--	--	250-260
			--	--	--	--
			--	--	--	--
			--	--	--	--
			--	--	--	--
45 21 51	111 44 00	Test hole TX-9	04-13-79	--	21/407	320-330
			--	--	--	370-380
			--	--	--	--
			--	--	--	--
45 22 52	111 41 49	Test hole TX-10	10-08-79	--	[1]80/848	740-750
			--	--	--	--
			--	--	--	--
45 22 14	111 43 28	Test hole TX-11	09-25-79	625-628	[1]61/615	515-525
			--	--	--	525-535
			--	--	--	535-545
			--	--	--	548-555
			--	--	--	560-580
45 22 14	111 43 28	Shot hole SH-1	11-06-78	--	50/--	50(O)

See footnotes at end of table, p. 74

Date of perforation	Temperature log		Natural gamma log			Self potential and resistivity log		
	Date	Interval (feet)	Date	Interval (feet)	Quality	Date	Interval (feet)	Quality
05-22-78	05-26-78	0-198	05-21-78	10-195	3	05-21-78	33-190	2
--	07-11-78	0-198	04-05-79	4-196	4	--	--	--
--	10-06-78	2-198	07-03-79	5-197	2	--	--	--
11-06-78	11-01-78	0-50	--	--	--	--	--	--
11-17-79	12-27-78	0-43	04-04-79	0-324	3	04-04-79	37-331	2
11-16-79	04-09-79	2-300	05-14-79	0-302	3	--	--	--
--	04-16-79	0-298	07-02-79	2-304	2	--	--	--
--	04-30-79	0-298	11-07-79	3-305	2	--	--	--
--	09-27-79	0-296	--	--	--	--	--	--
--	11-29-79	0-234	--	--	--	--	--	--
11-17-79	04-30-79	0-398	04-13-79	5-355	3	04-13-79	0-400	2
11-16-79	09-19-79	0-394	04-18-79	0-396	2	--	--	--
--	11-29-79	0-390	05-14-79	0-403	3	--	--	--
--	--	--	07-02-79	4-407	2	--	--	--
11-16-79	10-10-79	0-876	10-06-79	0-843	2	10-06-79	83-835	2
--	11-07-79	0-848	--	--	--	--	--	--
--	11-29-79	0-730	--	--	--	--	--	--
11-16-79	09-26-79	0-615	11-07-79	6-615	2	09-21-79	60-525	4
11-16-79	09-28-79	0-597	--	--	--	09-22-79	60-560	4
11-16-79	10-06-79	0-608	--	--	--	09-23-79	60-625	3
11-16-79	11-06-79	0-600	--	--	--	--	--	--
11-15-79	11-29-79	0-520	--	--	--	--	--	--
11-06-78	11-02-78	0-51	--	--	--	--	--	--

Table 7.--*Availability of borehole geophysical logs and related data for wells and test holes near Ennis (Thexton) Hot Springs (area 16)*--Continued

Location			Date of completion	Cored interval (feet)	Casing depth 6"/2" (feet)	Perforated interval (feet)
Latitude	Longitude	Name				
45 21 40	111 44 26	Shot hole SH-3	03-30-79	--	44/87	sealed
			--	--	--	--
			--	--	--	--
45 22 12	111 44 02	Shot hole SH-4	04-20-79	--	45/143	sealed
			--	--	--	--
			--	--	--	--
45 22 21	111 43 11	Shot hole SH-5	11-20-78	--	47/--	47(S)
45 22 08	111 43 49	Well 1[2]	--	--	--	--
45 22 09	111 43 49	Well 2[2]	--	--	--	--
45 22 26	111 43 46	Griffin well	03-05-79	--	178/--	170-176(O)
45 20 43	111 35 24	Jeffers well	--	--	--	--
45 21 04	111 45 42	Matzig	--	--	--	--
45 20 47	111 46 10	McClellan	--	--	--	--
45 22 20	111 43 34	Pray	09-22-77	--	138/--	138(O)
			--	--	--	--
45 22 27	111 43 44	Toth well	03-20-78	--	203/--	197-202(O)
			--	--	--	--

See footnotes at end of table, p. 74

	Temperature log		Natural gamma log			Self potential and resistivity log		
Date of perforation	Date	Interval (feet)	Date	Interval (feet)	Quality	Date	Interval (feet)	Quality
--	11-01-78	0-50	04-05-79	5-86	2	--	--	--
--	04-09-79	0-87	07-02-79	5-86	1	--	--	--
--	09-27-79	0-84	--	--	--	--	--	--
--	11-01-78	0-47	05-14-79	3-143	3	--	--	--
--	04-30-79	0-142	07-02-79	3-143	2	--	--	--
--	09-27-79	0-140	--	--	--	--	--	--
11-20-78	12-27-78	0-47	--	--	--	--	--	--
--	03-15-79	0-83	04-06-79	5-80	2	--	--	--
--	03-15-79	0-41	--	--	--	--	--	--
03-05-79	03-16-79	0-217	04-06-79	3-216	2	--	--	--
--	04-12-79	0-325	07-02-79	6-326	2	--	--	--
--	07-12-78	0-251	--	--	--	--	--	--
--	08-14-79	0-270	07-02-79	6-279	1	--	--	--
09-22-77	09-27-77	0-136	--	--	--	--	--	--
--	10-12-77	0-130	--	--	--	--	--	--
03-20-78	03-22-78	0-207	--	3-197	3	--	--	--
--	07-11-78	0-210	--	--	--	--	--	--

Table 7.--*Availability of borehole geophysical logs and related data for wells and test holes near Ennis (Thexton) Hot Springs (area 16)*--Continued

Location		Name	Date of completion	Cored interval (feet)	Casing depth 6"/2" (feet)	Perforation interval (feet)
Latitude	Longitude					
45 21 58	111 43 40	Yenny well	08-15-77	--	102/--	96-101(0)
			--	--	--	--
			--	--	--	--
			--	--	--	--

[1] 8-inch casing

[2] Cyprus Industrial Minerals Company well

Date of perforation	Temperature log		Natural gamma log			Self potential and resistivity log		
	Date	Interval (feet)	Date	Gamma interval (feet)	Quality	Date	Interval (feet)	Quality
08-15-77	08-09-77	0-122	11- -77	0-116	3	--	--	--
--	10-12-77	0-119	05-21-78	6-111	3	--	--	--
--	03-07-78	0-124	04-06-79	6-118	3	--	--	--
--	--	--	07-03-79	6-118	2	--	--	--

Table 8.--*Fluctuations in water level in the Marysville geothermal test well (area 21), June 1977-June 1979*

Month and year	Water level: Depth, in feet below land surface: Minimum during month	Water level: Depth, in feet below land surface: Maximum during month	Water level: Depth, in feet below land surface: Daily mean	Day	Time	Phase of moon[1] and days before (-) or after (+)	Diurnal amplitude: Amplitude, in feet: Minimum during month	Diurnal amplitude: Amplitude, in feet: Maximum during month
June 1977	523.13	--	523.46	28	2400	F-2	0.14	--
	--	523.79	523.46	28	1530	F-2	--	0.66
July 1977	523.04	--	523.29	02	0230	F+2	.16	--
	--	523.81	523.54	27	1700	F-3	--	.54
Aug. 1977	522.97	--	523.14	24	2030	Q+3	.13	--
	--	523.73	523.54	10	1200	N-4	--	.48
Sept. 1977	522.95	--	523.08	24	1400	Q+4	.14	--
	--	523.64	523.44	08	1330	L+3	--	.41
Oct. 1977	522.95	--	523.13	30	1200	F+4	.17	--
	--	523.82	523.58	15	0330	N+3	--	.47
Nov. 1977	522.83	--	523.08	26	0930	F+1	.16	--
	--	523.75	523.46	11	0230	N+0	--	.60
Dec. 1977	522.47	--	522.68	15	1230	Q-2	.18	--
	--	523.60	523.47	20	2300	Q+3	--	.73
Jan. 1978	522.63	--	522.87	05	0500	L+3	.12	--
	--	523.62	523.26	07	2300	N-2	--	.73
Feb. 1978	522.60	--	522.86	06	0600	N-1	.16	--
	--	523.52	523.30	04	2100	N-3	--	.61
Mar. 1978	522.54	--	522.81	05	0330	L+3	.18	--
	--	523.41	523.11	06	2130	N-3	--	.59
Apr. 1978	522.59	--	522.82	02	0230	L+2	.16	--
	--	523.40	523.19	23	1600	F+0	--	.53
May 1978	522.68	--	522.97	23	2230	F+1	.15	--
	--	523.55	523.34	19	1130	F-3	--	.58
June 1978	522.84	--	523.13	18	2100	F-2	.13	--
	--	523.60	523.39	17	1200	F-3	--	.62

See footnote at end of table, p. 79

Diurnal amplitude				Short-term perturbation		
Day	Time	Phase of moon[1] and days before (-) or after (+)	Amplitude, in feet	Day	Time	Remarks
07	0500	L-1	0.88	22	1000	--
28	2230	F-2	--	--	--	
21	0330	Q-2	.28	29	1100	Chart changed 07-29-77
29	0200	F-1	--	--	--	
04	0130	L-2	1.18	19	0130	--
25	2100	F-3	--	--	--	
01	0600	F+4	.27	28	1645	Chart changed 09-24-77
19	1800	Q-1	--	--	--	
03	1800	L-2	.17	10	0700	--
15	2100	N+3	.07	17	1230	
04	1700	L+1	--	--	--	--
14	1400	N+3	--	--	--	
31	1200	L-2	--	--	--	Chart changed 12-21-77
07	0700	N-3	--	--	--	
16	1200	Q+0	--	--	--	--
06	0600	N-3	--	--	--	
13	0800	Q-1	--	--	--	--
03	0400	L+3	--	--	--	
17	2300	Q+1	.16	24	1015	--
06	0330	N-3	--	--	--	
13	2200	Q-2	--	--	--	Chart changed 04-12-78
10	2300	N+3	--	--	--	
29	1000	L+0	--	--	--	--
23	2200	F+1	--	--	--	
13	1000	Q+0	.09	11	0945	Chart changed 06-27-78
19	1430	F-1	.21	12	0330	

Table 8.--*Fluctuations in water level in the Marysville geothermal test well (area 21), June 1977-June 1979*

Month and year	Water level						Diurnal amplitude	
	Depth, in feet below land surface					Phase of moon[1] and days before (-) or after (+)	Amplitude, in feet	
	Minimum during month	Maximum during month	Daily mean	Day	Time		Minimum during month	Maximum during month
July	--	--	--	--	--	--	--	--
1978	--	--	--	--	--	--	--	--
Aug.	520.44	--	520.73	15	2030	F-3	.19	--
1978	--	521.21	521.01	02	1300	N-2	--	.59
Sept.	520.46	--	520.61	17	2200	F+1	.18	--
1978	--	521.09	520.93	20	0500	F+4	--	.39
Oct.	521.57	--	521.79	28	0900	N-3	.18	--
1978	--	522.36	522.17	17	0330	F+1	--	0.47
Nov.	521.41	--	521.65	27	0830	N-3	.15	--
1978	--	522.26	522.06	02	0500	N+2	--	.58
Dec.	521.26	--	521.53	03	1600	N+3	.16	--
1978	--	522.38	522.11	12	0230	F-2	--	.62
Jan.	521.26	--	521.51	24	0500	L+3	.14	--
1979	--	522.31	522.11	01	0130	Q-4	--	.64
Feb.	521.20	--	521.57	07	0500	F-4	.15	--
1979	--	522.00	521.73	24	2200	N-2	--	.75
Mar.	521.11	--	521.28	28	2100	N+1	.17	--
1979	--	521.97	521.85	06	2100	Q+1	--	.44
Apr.	521.17	--	521.36	09	1800	F-3	.14	--
1979	--	521.90	521.71	28	1400	N+2	--	.42
May	521.12	--	521.24	06	0530	Q+3	.10	--
1979	--	522.10	521.85	25	1400	N+0	--	.53
June	521.46	--	521.60	06	2000	F-4	.09	--
1979	--	522.20	521.94	09	1430	F-1	--	.53

Diurnal amplitude				Short-term perturbation		
Day	Time	Phase of moon [1] and days before (-) or after (+)	Amplitude, in feet	Day	Time	Remarks
--	--	--	--	--	--	No data; recorder removed
--	--	--	--	--	--	for logging
08	1900	Q-3	--	--	--	Chart changed; reset
15	2030	F-3	--	--	--	08-01-78
05	1045	N+3	.36	16	1115	Chart changed 09-12-80
14	2100	F-2	--	--	--	
24	1145	L+0	--	--	--	--
02	2030	N+0	--	--	--	
23	1800	L+1	0.57	28	1600	--
29	1100	N-3	--	--	--	
22	1630	L+0	0.48	05	1015	Clock stopped 12-28 through
11	0900	F-3	--	--	--	12-30; time lost 34 hours
18	0800	L-3	--	--	--	--
25	0500	N-3	--	--	--	
02	0930	Q-1	0.47	28	1245	--
07	0500	F-4	--	--	--	
03	1000	Q-2	0.53	14	0430	--
15	2100	F+2	--	--	--	
03	1700	Q-1	--	--	--	--
26	1300	N+0	--	--	--	--
04	0600	Q+1	0.29	01	0715	Chart changed 05-03-79
12	1800	F+1	--	--	--	
02	1000	Q+1	--	--	--	Chart out 06-26-79
10	1900	F+0	--	--	--	

[1] Phase of moon: N, new; Q, first quarter; L, last quarter; and F, full.